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University News

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MONDAY, JULY 4, 1988 Rs. 1.50

GULBARGA UNIVERSITY
AIR

Sixth Annual Convocation of the Gulbarga University. From L to R : Dr. K.H. Cheluva Raju, Vice-Chancellor, Prof. K. Satchidananda Murty, Vice-Chairman, UGC, who delivered the convocation address, Shri A.N. Banerji, Governor of Karnataka, Dr. Jeevaraj Alva, Minister for Higher Education and Shri Narasimhachar, Registrar of the University.

KUMAUN UNIVERSITY
NAINITAL

Advt. No. 562 **Dated : 22-6-88**

Applications for the following posts are invited by **31st July, 1988** on prescribed form obtainable from the office of Registrar, Kumaun University, Nainital-263 001 (U.P.) by sending a self addressed 9" × 6" envelope and crossed postal order/Bank draft for Rs. 15.00 payable to the Finance Officer, Kumaun University, Nainital. Money orders are not acceptable. Candidates who have already applied in response to the **Advt. No.** 770 Dt. 9.8.84, **Advt. No.** 1477 Dt. 21.1.85, 1199 Dt. 25.11.85, No. 1736 Dt. 26.2.86 and 302 Dt. 30.5.87 for Readers English, **Advt. No.** 773 Dt. 4.8 86, No. 302 Dt. 30.5.87 for the post of Reader Geography; **Advt. No.** 54 Dt. 7.4.88 for the post Lecturer Computer Science, need not apply again. However, they may send the latest addition to their qualifications, changes of address etc., if any.

Sl. No.	Department	Professor 4500-7300	Reader 3700-5700	Lecturer 2200-4000
1.	Hindi	1 Lv	—	—
2.	English	—	2 TLR	—
3.	Geography	—	1 Lv	—
4.	Sociology	—	—	1 TLR
5.	Political Science	—	—	1 TLR
6.	Computer Science	—	—	1 TLR

Note : R, implies regular; TLR, implies temporary likely to be regular; Lv, implies Leave Vacancy

Qualifications

1. For the Post of Professor Hindi

Either—Eminent scholarship with published work of high quality and active engagement in research and ten years experience of teaching or research and experience of guiding research at doctorate level ;

OR

Outstanding scholarship with established reputation for significant contribution to knowledge.

2. For the Post of Readers

(i) Good academic record with a doctorate degree or equivalent published work and active engagement in research or innovation in teaching methods or production of teaching materials; and

(ii) Five years experience of teaching or research including at least three years as lecturer or in equivalent position.

3. For the Post of Lecturers

(a) a Doctorate degree or research work of an equally high standard in relevant subject ; and

(b) consistently good academic record with first or high second class master's degree or an equivalent degree of a foreign University in relevant subject.

4. For the Post of Lecturer in Computer Science—If candidates possessing the qualifications as in Sl. No. 3 above are not available, candidate possessing MASTER'S DEGREE IN COMPUTER SCIENCE with one year relevant professional experience and experience of programming language / operating systems data processing / system analysis/computer net works/microprocessors can also be considered.

Further details regarding qualifications, service terms and permissible relaxations in qualifications will be provided with application form. Preference will be given to SC/ST/disabled candidates if otherwise considered suitable by the selection committee. Application froms will not be sent by post after **25.7.88** and applications on plain papers, received after due date are not acceptable.

R.C. Pant
REGISTRAR

TILAK MAHARASHTRA VIDYAPEETH
PUNE

A Deemed University

Dated : 23rd June, 1988

Applications for the Post of **"Professor and Director Nehru Institute of Social Studies"** are invited so as to reach the Vidyapeeth on or before **Tuesday, 12.7.1988.**

(1) Pay Scale : Rs. 1500-60-1800-100-2000-125/2-2500 plus allowances. (Subject to revision as per U.G.C. recommended scales of pay).

(2) Qualifications

(i) Eminent scholar with published work of high quality in the subject. Actively engaged in research. About ten years' teaching and/or research experience. Experience of guiding research at doctoral level.

OR

(ii) Outstanding scholar with established reputation, having made significant contribution to knowledge.

OR

(iii) Second Class Master's degree in Economics/Political Science/Sociology or equivalent degree. Ph.D. and some published work of recognised merit. Capacity to do and guide research. Capacity to participate in and guide group research. Interest in and desire to pursue and develop interdisciplinary studies.

Teaching experience for atleast ten years, of which five years to Post Graduate Classes. Persons with administrative experience preferred.

Desirable : Interest in problems of Rural Society. Constructive Social and field work. Desire for creative work.

M.R. Khanwelkar
REGISTRAR

14 JUL 1988
C.F.T.R.I., MYS

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor:
SUTINDER SINGH

Challenges of the Rural Development and Responsibilities of Universities

Devendra Kumar*

There are 3 billion people i.e. 60% of the world's population, living in villages. 141 nations called 'developing' have largest proportion of this population. Of this, Asia and Africa have 2.6 billion i.e. 84% of the rural population. These are poor nations. In the beginning of the century it was hoped that gradually cities will replace villages but now we find that cities are not able to cope with rural migrants. UN statistics show that the urban populace consists of rural migrants ranging from 35 to 60% depending upon the country's carrying capacity.

There is a progressive erosion of employment and talents from villages as the gradient increases due to difference in living standards between the cities and the villages. It is the same between rich and poor countries. Migration creates problems. The solution lies in increasing the level of life in the villages. The universities of the developing countries must take this challenge. Actually all universities should act as lighthouses to their communities and not remain ivory towers.

The university should relate itself to the needs of development of the area and (i) influence rate and structure of economic development of villages, (ii) check economic inequality, (iii) check migration, (iv) promote balanced dependence. This goal has been well put by Julius Nyerere of Tanzania as early as 1966 when he said, "The university in a developing society must put the emphasis of its work on subjects of immediate moments to the nation in which it exists and it must be committed to the people of that nation and their humanistic goals.... The expenditure on a university can be justified only if it promotes real development of our people......The role of a university in a developing nation is to contribute, to give idea, manpower and service for the furtherance of human equality, human dignity and human development".

In India we have identified four major challenges of the rural economy—unemployment, over-population, illiteracy and environmental degradation. The suggestion is that these critical priority areas (they may differ from country to country) should form principal concerns of the university system. Some specialised agencies or educational institutions alone cannot tackle it. All universities together must involve themselves in the people's problems.

Unemployment

Poverty has increased, as the number of days people in the village are able to get employed in production work, has decreased. In India the rough figures are that whereas in 1900 the number of days of availability of work during the year to an average villager was 250, by 1925

[Based on the paper presented at the 14th Commonwealth Universities Congress, 1988.]

**Vice-Chancellor, Gandhigram Rural Institute, Gandhigram-624302.*

it got reduced to 225, by 1950 it was 200 and by 1975 it stood at 175 days in the year. This may have gone down still more during the intervening years. Large number of the villagers, therefore, live below the level of subsistence. The universities will have to evolve an economic model where the urban system would assist the larger rural economy and where ecologically sound and socially just scientific development can take place in the decentralised units of population. For this, such technologies will have to be evolved in their labs which could create new industries which need low capital, low energy and are adaptable to the conditions of the poor in the villages.

In India we have 162 universities and more than 100 specialised national research labs under various technological bodies but except for 22 Agricultural Universities the contribution of these scientific bodies in solving the problems of the villages has not been as it was expected to be. All the universities and other labs will have to increase their area of interface with the villages. Possible areas are Rural Technologies in energy like bio-gas, windmills, micro-hydel, solar cookers, smokeless wood-fuel cook-stoves, improved manual and animal operated implements and bullock carts; In Housing : Non-erodable mud-walls and non-inflammable thatch roofs, low-cost housing, hand-flush and other inexpensive toilets and sanitary devices, soakage pits, hygienically sound dug-wells with ball bearing fitted pulleys to draw water etc.; and in small scale industries the examples are : hand-made paper, briquette from biomass, food processing decentralised units, spinning-weaving, pottery, etc. with use of improved tools and locally produced power, leather tanning and manufacturing, carpentry, blacksmithy, pozzalona lime cements, etc. etc. These are some of the areas which are being handled in this field in India. If all universities take it up, the results will be phenomenal in providing additional avenues of employment.

Population

Poverty saps people of initiative, the psychology of defeat makes them see danger in all change. Population control methods fail due to inadequacy of both the attitudes as well as the circumstances. The University Grants Commission (UGC) has selected 12 universities as Population Education Resource Centres (PERC). Gandhigram is one of them. The PERC is intended to reach 3 target groups, namely, the teaching faculty, the students and the community which specially constitutes its bull's eye. The prime objects of PERC are desir as (i) Raise awareness among young people of th population problem, (ii) develop leadership amon youth to take up this work; and (iii) research, trai ing and to evolve and supply, learning materia About 5000 villages have been taken up by 63 unive sities and 1300 colleges under this programme. Thi is a good beginning and an instance where the unive sity is reacting to the problem of the people.

Illiteracy

India has more than 400 million illiterates. It ha been found that areas which have greater percentage of literates are more prone to accept changes an innovations. India has taken up a mission approac on literacy for adults belonging to the age group o 15 to 35. 92 universities and 2500 colleges are presently involved in this field and special grants are being provided for this programme to the universities under which almost 10-12 thousand villages i.e. 2.5% of the number of villages are being covered. Since 1984, an area of 119 villages has been taken up by Gandhigram Rural Institute (GRI).

The UGC has encouraged departments of Extension in many universities to plan rural-oriented programmes in their area. In 12 universities, there are departments of Adult Continuing Education and Extension like the Delhi University, Madras University, University of Poona, SNDT University, Vikram University, Ranchi University, Banaras Hindu University, Kerala University, etc.

Environment

Whereas in the affluent countries, pollution seems to be a problem due to excess industrialisation, production and consumption, in the poor countries—the pressure of populations—though consuming per capita much less than other—on the meagre resource base of land, water and flora and fauna, creates environmental hazards of a deeper nature. The hills and mountains get denuded of trees, all plain land gets under the plough and erosion takes place both on slopy and plain lands. Excess agriculture leads to loss of soil fertility and scarcity of ground water resource. All plant and animal life gets degenerated leading to a vicious cycle of poverty.

There are evironment awareness camps under the National Cadet Corps and National Social Service Programmes in the universities. Though the study courses in the universities do not have much tha brings the students any closer to the immediate community from which they come, there are extra curricular activities like the National Service Scheme (NSS) and National Cadet Corps (NCC) whereby students have camps in rural areas and undertake physical labour in works for the village communities like tree planting, making roads, bunds, etc. It is estimated that 1.1 million students are involved in these and such other programmes which is about 1/3rd of the student population in higher education.

Many universities of this area are involved in the study of industries causing pollution and are working for the enforcement of pollution control in the Cauvery River basin in both the States of Karnataka and Tamilnadu. In the development and preservation of Western Ghats, universities in the vicinity and reach of the Ghats are generating academic and action programmes.

We find that among these four areas very little work has been done in the field of appropriate technology for the villages, whereas in population control and illiteracy removal mechanisms have been evolved. In the fourth area of environment upgrading too, the awareness is there but university's linkage not established. It is necessary therefore that the Association of Indian Universities (AIU) take up the matter and evolve necessary direction and methodology to remove the lacuna. Applying the same analogy the Association of Commonwealth Universities (ACU) could also identify similar critical problems that beset the individual nations and make the university set up there apply itself to its solution.

All the universities should expose their students and staff to the situation of the villages around. The teaching, research and extension programmes be drawn in a way that the development of the students, staff and the rural community all around are done through it simultaneously. For this the curricula will have a large measure of field work, the researches directed to the needs of the villages and extension done to find innovative and replicable models in development strategies as can have statewide application. ☐

RAYAT SHIKSHAN SANSTHA, SATARA (MAHARASHTRA)

Applications are invited for the post of a 'PRINCIPAL' for the College conducted by Rayat Shikshan Sanstha. Scales and qualifications will be prescribed by the Shivaji University. Other things being equal, candidates of the Backward Class community will be given preference.

For the form of application, please apply by sending a self-addressed envelope of 25 cms. x 10 cms. size and a crossed postal order of Rs. 25/- drawn in favour of Secretary, Rayat Shikshan Sanstha, Satara.

Applications should reach the undersigned on or before **20th July 1988.**

Secretary
Rayat Shikshan Sanstha, Satara
(MAHARASHTRA)

Distance Education and Print Media Instructional Strategies

Umrao Singh Chaudhari*

Distance education is a strand of non-formal education. It takes place in the absence of teacher-taught interface. Being controlled and regulated from a distance, it is also called "remote controlled" or "tele-communication" education. The physical separation of teacher and learner envisages a different role for the teacher. He may meet the students only for selected tasks such as counselling, giving tutorials or seminars or solving study problems.

The growing awareness that learning, not teaching is the decisive factor in education has brought support to distance education along with other methods of independent study. Distance education is often distinguished from correspondence study by the notion of three way teaching. It can be equated with the combined, systematic and flexible use of at least three major elements : print-based communication, broadcasting (and/or other technologies), and face-to-face contact in support of an independent learner. Out of these elements, face to face communication is transacted for a very short duration.

So far as the effects of media of mass communication are concerned, five decades of research in U.S.A. suggest that there are no learning benefits to be gained from employing different media in instruction, regardless of their obviously attractive features or advertised superiority. "The best current evidence is that media are mere vehicles that deliver instructtion but do not influence student achievement any more than the truck that delivers our groceries causes change in our nutrition. Basically, the choice of vehicle might influence the cost or extent of distributing instruction, but only the content of vehicle can influence achievement." Contrary to the research findings, the ability of various media to increase learning is advertised by the multi-million dollar industry to push the sale of these machines for instruction. Therefore, the text material still remains a powerful and popular mode of presenting and transmitting large amount of knowledge in a well organized and psychologized way to the learners.

By far the most important medium in distance education is the printed word. This applies to conventional correspondence study as well as to highly sophisticated multi-media presentations like courses of the open university. Although the choice of media depends on the nature of subject matter, print media has been found largely effective in each of the cognitive, affective and conative domain. In fact, a medium is just a support for course material in form of print. Care must always be taken that this existing and fundamental medium should not be overlooked. Researches done in the area of 'learning from text' reveal that the written word is more effective in certain domains than the other. If the objective is cognitive, involving analysis as in philosophy, the printed word will probably be more effective.

Cognitive psychologists and educators have designed certain instructional strategies to help teachers convey large amount of information as meaningfully and efficiently as possible in the conventional formal groups situation as well as in "learning at home" individual setting. Although there is considerable variation in opinions as to how one can use cognitive learning research and theory in the formulation of instructional principles, yet agreement on certain points can be discerned. All cognitive theorists emphasise the importance of cognitive processes in the planning of instruction. They also propose that the student/learner should be conceptualized as a processor of information, who actively selects and interprets certain stimuli from all those which impinge on him in the learning situation.

The major function of the instructor is to provide whatever guidance seems necessary to help the learner to organize new information in a meaningful way. There is a distinct preference for featuring situations which stimulate inquiry search pattern and for avoiding those situations which make the student a passive recipient of facts to be memorized by rote practices.

Any instructional material designed to improve learning to learn should explicitly describe the main points of the learning, how they are related, and how they might be interrelated with what the learner already knows. If such methods of study and recall are to be helpful to the learners in the process of

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**Reader, Deptt. of Education, Devi Ahilya Vishwavidyalaya, Indore* learning to learn, devices such as 'advance organizers', interspersed questions and tutorial letters should be used.

'Advance organizer' is a derivative of the Meaningful Verbal Learning Theory advanced by David P. Ausubel. Ausubel defined 'advance organizers' as introductory material (or superordinate statement) at a higher level of abstraction, generality and inclusiveness than the learning passage itself. They are not a summary presentations of the principal ideas in a passage. Advance organizers also differ from 'overviews' in being relatable to presumed ideational content in the learner's current cognitive structure. The research findings so far, by and large, indicate that advance organizers facilitate learning in almost all content areas, and with individuals of all grade and ability levels.

A basic problem involved in the effective control of learning behaviour may not be whether the material is broken into small steps or physically separated in stimulus and response terms, but whether the method of instructional control gets the student to practice the stimuli and responses, and to make the appropriate associations between the two. Questions are a major force in shaping the nature of students thought and methods of inquiry because they act as motivational stimuli and have arousal and associative outcomes.

Summarizing researches on learning from written material, L.T. Frase of Bell Telephone Laboratory, stated three characteristics of questions influencing learning: (a) their position in text, (b) the contiguity of questions and related content, and (c) the type of question. In general it was found that subjects learn most when the questions come after the material to which they relate. Studies have shown that questioned groups, in comparison to a control group which did not see adjunct questions, retained more of questions related material. Post question groups retained somewhat more incidental information than the pre-question groups. The post questions work best when the motivation is low, and they occur after small amount of text. In this regard, a useful rule of thumb for writers would be to insert a few high level questions after each section of text material dealing with an important theme, topic, issue, theory or similar substantive unit.

The potential of "letter form" of communication has not been exploited for pedagogical/Anthropogogical purposes in our country. Letters written from jail by Jawaharlal Nehru to his daughter Indira Gandhi amply demonstrates the pedagogical power and potential of 'letters' for distance education. Investigations carried out at the University of South Africa have revealed that students regard the tutorial letters as 'irreplaceable' in the study package. During the course of a year the tutorial letters that are sent out maintain a link between teacher and student, and form a vital part of the interactive feedback system in distance learning. A tutorial letter has also been found helpful in pacing the students who are studying at home. Presently, tutorial letters written to students stationed in remote areas contain vital information for assignments and guidelines for studying a particular course. But, they are hardly being used to transmit fundamental knowledge.

A letter is a personal and persuasive communication, and therefore, it can be employed on the one hand to motivate, to provide an 'advance organizer', and to reduce academic isolation of the distant learner; and on the other to transmit knowledge in a lively or "talk to" style from a distance. It has been found by E. Paul Torrance in his studies on creative reading that the use of personal pronoun like "I" and "we" in the text material increased the involvement of the reader and thereby raised his achievement. If the language used in the material employs a personal style which 'talk to' the learner, he will find the material interesting and absorbing.

Thus, we have seen that the logical structure of the written material and provision of opportunities for 'search' in it contribute to the improvement of learning. Adroitly presented 'orienting instructions' also play an important role in disposing the reader to respond to certain aspects of text. General instructions to learn, advance organizers, various cueing strategies, questions and tutorial letters are some of the important classes of orienting directions. In order to make distance learning more effective these strategies and 'aids to study' should be integrated into the learning material and study guides. ☐

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

Thomason College of Engineering, Roorkee

S.K. Bhatnagar*

Prompted by the publication of the review of K.V. Mital's 'History of the Thomason College of Engineering' by Shri G.B.K. Hooja in the UNIVERSITY NEWS of March 21, 1988, Shri S.K. Bhatnagar of the University of Roorkee Library has sent us this brief history of the Thomason College, the precursor of the University of Roorkee, that he has composed in verse. We are pleased to carry this poem in the hope that it will tickle the poetic sensibilities of our readers.

O' Goddess Saraswati to you I earnestly pray
To bless me recapitulate the history of the Thomason College
And give me strength and show the right way
To enable me to talk of this fountain of knowledge.

Before I venture to tread a track un-beaten
I express my reverence to the Motherland
And to my birth place Roorkee, for me a heaven
Known far and wide, a worthy land.

Situated at the feet of the Holy Haridwar
Stands this town in the Gangetic Plain
Near the Siwalik Hills only 25 kilometers far
A healthy station with climate Sub-montane.

The commencement of the Western & Eastern Jammuna Canals
Respectively in the year 1817 and Eighteen Twenty Two
Induced Lt. Richard Baird Smith of Engineers Bengal
To train in Civil Engineering the Europeans and natives too.

Saharanpur was first chosen as the centre of Instruction
And grade of Sub-Asstt. Executive Engineer was introduced
In 1845, to acquaint them with peculiarities of construction
And thus in the begining only four such were produced.

In 1846 Lt. Col. Cautley, the Bengal Army's prince
The famous designer and builder of the Ganges canal
Met the Governor James Thomason of the North West province,
And for an engineering college at Roorkee, he gave a call.

Lord Hardinge in Eighteen Forty Seven had a strong will
For the vigorous prosecution of the Ganga canal
This undertaking would tax, evidently, the utmost skill
Industry, resources of the people, one and all.

To construct a work of this magnitude was a task
Beset with engineering difficulties in its first course
Its maintenance, improvement & extension would ask
For a constant supply of an engineering force.

**Assistant Librarian, University of Roorkee Library, Roorkee.*

The grand proposal of a state college of engineering
Obtained the cordial support of India's Governor General
On October 18, 1847, the small college came into being
With Lt. Robert Maclagan as its first principal.

The staff a Head Master and teachers three
Worked together with great zeal like good friends
Among them were two of our own country
Who gladly, with enthusiasm joined their hands.

The prospectus issued provided for three departments only
The first for civilians regarding Sub-Asstts. training,
Second for Europeans to serve as Overseers in P.W.D.
The third for training young Indians in Surveying and levelling.

First batch was admitted in 1848 on the New Year's Day
The Indians apparently joined the department third one
Ten students in the Second Department then found their way
And without any building, in tents, the classes were run.

It was seven rooms building with verandahs constructed
That could ever be called the fore-runner of the college
Due to second Sikh War the opening session was interrupted
And this actually suspended the imparting of knowledge.

The commission enquiring into Bengal's Public Works execution
Appreciated the valuable aid this college afforded to P.W.D.
It spoke high, in 1851, of level of imparting instruction
To the students at the campus on a high degree.

Opportunities enjoyed in the Canal workshop by students
Their practical acquaintance with every description of Engg. duty
Was equally appreciated by all, their foes or friends
And this all, by the commission, was considered a beauty.

With the accretion of territory at the end of Second Sikh War
Increased undertakings of canals & roads became a necessity
The college with its establishment could not go far
And was utterly inadequate to meet the exigency.

Mr. Thomason at once grabbed the alarming situation
And prepared a scheme for the college's enlargement
Justified the expenditure of one and a half Lakhs on education
Which would, in turn, bring skill for the country's advancement.

The design of the new college was thus entrusted to Lt. George Price
Who was working, in 1852, on the Ganges canal
The construction completed in 1856 still breathes life
And that time too could respond to the pioneer's call.

The Roorkee college was known as such until the year 1854
When a scholarship was instituted to give Thomason, a fame
And considering his eminent services further more
The Governor General named the institution after his name.

To enquire into the working of the college, past and present
In the year 1856 was appointed a Committee
It's recommendations though received Governor General's assent
But could not be put into effect immediately.

Col. Maclagan, the first principal retired in the year 1860
And was succeeded by Williams, E.C.S., a Captain
Who in turn was followed by J.C. Medley, R.E.
In 1863, and thus continued the principals in chain.

For the Senior and First Departments, in a spirit true
In 1864, a Third Year's Course was introduced
Unless a higher certificate was gained in years Two
And for this reason more good minds were produced.

By 1870 the number of students in the college had grown
And the nomenclature of the college completely changed
The staff of officers was only Five as records have shown
Assisted by a staff of masters trained.

The period when Mr. Brandreth acted as the principal
The Guide Corps Class was thrown open to Indian army
And in 1881 marks were allotted for fitness physical
For the first time in the institution's history.

From the year 1882 the entire financial responsibility
For the college was thrown on the government local
Indians to be given all vacancies in the P.W.D.
Irrespective of their position held after the examination final.

The college was reorganized in 1896 to the effect
That students would pay for their own education
This extension of the commercial principles in fact
Added a good number of applicants for admission.

Thus it became necessary to insist on a process of selection
Only those who could compete, could secure admission
The college did'nt merely concern itself with Engineering education
But to develop it into a Provincial Technical institution.

The administration of the college was transferred to the deptt. of education
Emphasizing that the college was not only a nursery for P.W.D.
But also to cater to the needs of the Province for technical education
And finally the college was attached to the Allahabad University.

In 1895 qualifying educational tests were brought into force
And in 1896 first revised entrance examination was held for all
From Two to Three years was extended the Engineering class course
And a year's apprenticeship for students, was a further call.

The same year a class was formed for apprentices mechanical
Of a Three year's practical course with theoretical education
Followed by Electrical Engineering class with workshop technical
In 1899, equipped with the machinery electrically run.

In 1900, Sir A. P. MacDonnel, then Lt. Governor
Appreciated the engineers who brought credit to the college
Held a high opinion of their zeal and character
Of their actual execution of works and their knowledge.

In 1901, a council was created to help Principal Atkinson
In matters not dealt by the management committee
By 1900 the college had undergone expansion
Regarding number of classes and students at Roorkee.

The object of the Government, though, was to develop the college
Into a technical institute for the province North-West
But the imparting of the advanced technical knowledge
Could'nt be carried on, though tried level best.

The internal working of the college was reformed in 1902
Mechanical apprentice class altered to one of years Three
Entrance Examinations at that time were introduced
And an instructor, in 1905, was appointed in Chemistry.

In 1905, did visit Roorkee, the Viceroy Lord Curzon
The Prince of Wales in the following year did
In 1907, the college could invite the attention
Of the then Lt. Governor, Sir Johan Hewett.

In 1911-12 it remained a purely Civil Engineering Institution
On transfer to Lucknow of Automobile driving class
In 1919 came the Committee of Management for its reorganization
And in 1922 was started the first Overseer class.

In April 1928 the Viceroy Lord Irwin visited Roorkee
The same year standard for the entrance examination was raised
In 1929-30 Col. Sandes retired succeeded by Phillips, P.P.
Whose services, though of years two, were very much praised.

Raja Jwala Prasad, the Chairman of the reorganization committee
Appointed in 1939, by the United Provinces Government
Recommended to convert the college into an autonomous technical University
To have a fair chance for its over all development.

Thanks to the enthusiasm of the United Provinces Govt.
And to the efforts of Jwala Prasad and the Fortescue committee
That the college could run on the road of advancement
And could in 1949 stand as the Roorkee University.

THE HINDUSTANI WAY

Distressed at the growing tide of fundamentalism and communalism, Prof. K. Satchidananda Murty, Vice-Chairman, University Grants Commission, delved deep into the history of Deccan to show that the creative impulse, the spirit of national unity and cultural harmony were not alien to us. This was indeed the distinctive Indian life style, which Babar encountered and called 'the Hindustani way'. Prof. Murty was addressing the sixth convocation of the Gulbarga University. Excerpts.

Convocation

As most of you know, the Bahmanis ruled Deccan from 1347 to 1424 with Gulbarga as their capital, and from then on till 1538 from Bidar, though after 1482 their effective control did not extend much beyond the capital and its surrounding area. In the Bahmani empire and in some independent states with Muslim rulers (e.g. in Bengal under Alauddin Husain Shah and Nusrat Shah and in Kashmir under Zain-ul-Abdin) which arose after the Delhi Sultanate declined, cultural contacts between Hindus and Muslims were "closer and deeper" than under the Delhi Sultanate. The successor kingdoms of the Bahmani empire, especially those of the Adil Shahis of Bijapur and the Qutb Shahis of Golconda, on the whole continued this process of cultural synthesis till they disappeared.

In all these post-Delhi Sultanate and pre-Mughal states "the creative impulse, the spirit of national unity and cultural harmony were more evident" than before. (S. Abid Husain, *Indian Culture*, Aligarh, 1963, p. 35.) The Bahmani culture as well as the later "multicentric" culture at Bijapur Golconda and other places, had one 'common trait': "the vigorous admixture of Hindu ideas everywhere". (H.K. Sherwani, *The Bahmanis of the Deccan*, Hyderabad, 1953, p. 401.) Together all these helped the emergence of the distinctive Indian life style, which Babar encountered and called the Hindustani way.

According to Athanasius Nikitin, the Russian traveller who was in Deccan from 1469 to 1474, Gulbarga attracted people from all over India as it had the tombs of Shaikh Sirajuddin Junaidi, the preceptor of the first Bahmani ruler, and of that ruler too. He found Bidar was then the chief city of Muslim Hindustan, and law and order in it were excellent. The Bahmanis appear to have foreshadowed the swadeshi concept for, Nikitin wrote, they followed the principle that only articles produced in the country should be sold in the bazars of Bidar. The great poet Jami (1414-1492) of Iran observed that in the late 15th Century the Bahmani Prime Minister Mahmud Gawan made India "the envy of Rum itself".

This became possible due to the following reasons among others:

Principles of government based on humanism and ethics were placed as ideals before the Bahmani rulers. (These were codified by Malik Saifuddin Ghori in his *Nasaihul Mulk*, a treatise on monarchical government). For example, as Isami wrote, the first ruler Alauddin Bahman was "just and benevolent", always gave relief to the poor, was always kind to them and tried to follow Divine commandments. Sultan Ahmad I advised his sons to respect the learned, be good to state servants, heed the royal councillors in formulating policies and take care of farmers who produced food for all. Ahmad II asked his son never to pass a decree without discussion and argument with royal councillors, and never to depend on the advice of self-seekers. (Sherwani, Ibid., pp. 62, 196, 228.) Could there be better advice than this to those in power now at Delhi, Hyderabad, or Bangalore?

The sultans who rightly became famous had learned and wise shaikhs to advise and guide them in addition to able and sincere ministers. Shaikh Zainuddin Dawud (1302-1369), for example, refused to be friendly with Sultan Muhammad I unless the latter reformed himself and followed and implemented the Islamic principles of morality; and the Sultan had to agree. Syed Muhammad Gesu Daraz (1321-1422) could declare publicly that to speak what is true and just before a tyrant was more courageous than participating in a battle, and refused to bless the crown prince though Sultan Firoz Shah requested him to do so. When, in consequence of this, he was asked to move away from the neighbourhood of the palace, he preferred to do so. Muslim religious men like this not only admonished and stood up to rulers, but also worked for raising moral and spiritual level of the people and for establishing harmony and goodwill among them. (K.A. Nizami's article in *History of Medieval Deccan*, Vol. II, ed. H.K. Sherwani, Hyderabad, 1974.)

Sultan Ahmad I (reign 1422-1436), who was a disciple of Gesu Daraz, came to be recognized as a saint by both Muslims and Hindus. During his annual Urs, the Head Jangam of Madhyal comes to his tomb at Bidar, dressed as an orthodox Muslim and followed by 300 men, camels and horses, enters the sepulchre every day, blows the conch, breaks coconuts and offers flowers. Thousands of Hindus and Muslims attend the Urs and pray for the saint's blessings. Firoz was a learned and liberal ruler. He initiated the policy of entrusting Hindus with governmental responsibilities; he married Hindu women (two of his wives were princesses of Vijayanagar and Kherla). Due to Bahmani encouragement trade and commerce—especially overseas trade—were mostly carried on by Hindus. The Bahmanis did not levy *jiziah* and till the last years of their rule there were no conversions.

As the late Professor Gurti Venkata Rao of Andhra University pointed out long ago, the frequent wars between Bahmanis and Vijayanagar were due more to economic and political factors than to religious antagonism. (His paper on "Bahmani-Vijayanagar Relations" in 'Proceeds of Ind. Hist. Congress', Allahabad.) Just as Western Chalukyas and Rashtrakutas as well as the Yadavas and Hoysalas fought in the past for the Krishna-Tungabhadra Doab, later the Bahmanis and Vijayanagar fought for it. It should also be recalled that in their wars the Bahmanis were having Hindu allies (e.g. the Velamas of Nalgonda), and they fought with Muslim rulers of Gujarat, Khandesh and Malwa alsa, while the Vijayanagar rulers had a considerabla Muslim population in their city and many Muslims in their armed forces, allowed their Muslim subjects to eat beef, adopted to some extent Muslim dress and food, and often waged wars with other Hindu kings. The great modern historian of Deccan rightly commented : "However much religion was brought to a fore by interested politicians in India, it was entirely for personal gains that actual wars were fought." (Sherwani, *Ibid.*, p. 410, n. 96.)

Lastly, Bahmani patronage of learning, art, architecture and literature, was unexcelled. They did their best to attract to Gulbarga and Bidar renowned mystics, theologians, literary men, artists and scholars of all types from not only all parts of India, but from the Gulf countries, Iran, Transoxonia, Iraq and Arabia. Muhammad I tried to get Hafiz from Shiraz and he almost came; while Gawan vigorously attempted to get Jami, but failed to do so. However in most cases they succeeded. What they did for the spread of education was also praiseworthy. In this context mention should be made of the great Madrasah (college) which Mahmud Gawan erected in 1472 at Bidar as "the Kabah of purity". on a front wall of which was inscribed the Quranic Verse: "Peace be unto you that are good, so enter it for ever." It is a huge building consisting of four three-storeyed wings enclosing an open court, with a mosque, a library-hall, lecture rooms, and lodgings for teachers and students. It "breathes of refinement and elegance from every part and furnishes a fine example of the perfect symmetry of outline, homogeneity of form, and excellent proportion of various parts and their balanced disposal". (Z.A. Desai's article in *Hist. of Med. Deccan*, ed. Sherwani, Hyderabad, 1974.) When one proudly talks of Nalanda, Vikramsila etc., one ought to mention the Bidar Madrasah also, as it is a part of our heritage.

At present when, as President Venkataraman said on January 25, so much "distress (is) caused to the people by communal riots, the handiwork of religious fundamentalism and communalism", it may be beneficial to recall historical facts like these just mentioned. The right sort of religious understanding and historical knowledge, and action in the light of them are antidotes to fundamentalism and communalism.

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Our Prime Minister and a couple of our leading scientists have deplored the mediocrity prevailing in our educational and scientific institutions and have stressed the necessity to nurture talent, stimulate creativity and achieve excellence. This has been a concern shared by quite a few of us, and not expressed by these for the first time recently. Even in ancient and medieval times some Indian thinkers have discussed the nature of creativity, pratibha or prajna. Much study and research has also been done on this subject in the west recently.

Fostering of creativity would be possible in the following circumstances. The system of higher education and research is a subsystem of our total education system, which is itself an integral part of our socio-economic and political pattern. No radical change in the first is possible without a preceding similar change in the second, which would again be impossible without such an occurrence in the last. The guru-sishya syndrome is prevalent in the former two, while in religious, social and political life 'babaism', the authority of irrational tradition, party systems lacking internal democracy and personality cult dominate. Debureaucratisation of educational and research institutions is not possible unless the procedures and routine in them and the grip of civil service over them vanishes. Management styles in these should not be like those in public or business administration. When most of the senior scientists and scholars with established reputations prefer to join as chairmen or members of advisory commitees to government, planning bodies and grants-giving agencies, or as educational administrators or 'scientific research managers', their example catches on. Science and scholarship are jealous mistresses; they demand complete loyalty and wholetime attention. Only if and when society in general and government value single-minded devotion to learning and continuous quest for truth above all other things, there will be motivation for their pursuit.

Our pioneering modern scientists have emphasized this. May I quote them ? "We should not live in the glory of the past", "we should show by our work, by our intellect and by our service that we are not decadent". (J.C. Bose, from *Indian Scientists*, p. 106.) "A long period of intellectual stagnation has produced in us a habit of dependence on authority....Reason was bound to the wheel of faith... Intellectual progress was handicapped...Reason has to be set free." (P.C. Ray, Presidential Address, Ind. Sc. Cong., 1920.) "We live in a modern age; we live in an age of research; a period of intense striving to create new realms of thought, to penetrate the mystery of nature by the use of all intellectual and material forces under human command.... We in India, as a people, cannot afford merely to stand aside and be merely passive spectators of this ..." (C.V. Raman, Convocation Address, Banaras Hindu University, 1926.) Our academics of subsequent generations have by and large not heeded these exhortations.

Moreover, ours has become unlike the scientific societies of Europe and USA in which "there is emulation without envy, ambition without jealousy and contention without animosity".

The governments of Jawaharlal Nehru and his successsors have been giving financial support for higher education and research in all the sciences—natural, applied, technological, as well as humanistic and social—in a way which does not happen in any other developing country. But we scholars and scientists have not been able to show results commensurate with this, not merely because of lack of adequate equipment or libraries. According to Professor D. Wohleben, an experimental solid-state physicist of the University of Koln (FDR), to get "mind-stuck about big equipment" is to get stuck scientifically". "The cheaper and smaller the equipment the larger the productivity"—he observed. *The Hindu*, May 24, 1987.) Professor Paul C.W. Chu, a pioneer of superconductivity and leader of the research team which produced superconductivity at "a balmy 98 K (−283° F)", considers that it is perseverance over time that can solve problems, not money alone. (*Time*, August 10, 1987.)

Most of us academics who are now in the late fifties or sixties have not done as well as would and ought to have, because we lacked the necessary will, devotion and perseverance. Some of us who have achieved some sort of recognition—at the most an FRS, a National Award, a Padma Bhushan or some such thing—somehow get close to the establishement, deplore what's now happening in our universities and research institutions and tend to sermonize. None of us set about courageously, actively and unselfishly fighting the forces within and outside these institutions which are responsible for the present situation; nor are most of us content to ignore everything else and work day and night with unflagging zeal solely for the dissemination and advancement of knowledge. ☐

Communication

National Humanities Documentation Centre

Sir,

This refers to Roma Ray's article on National Humanities Documentation Centre, published in **University News** 21 March 1988 issue. The Universe of knowledge is broadly divided into three units : science and technology, social sciences, and humanities. In India as well as abroad, humanities are always given low priority in information and documentation. But of late with the increase in the volume of literature, both critical and creative published in humanities, the demand for information retrieval and information services by the scholars working in the field has increased. Otherwise, they would be rudderless and helpless in collecting information and utilising it to the best of their effort. This indeed is the **raison d' etre** of the proposed National Humanities Documentation Centre. The inclusion of museums and archives into the fold of humanities as suggested by Roma Ray is welcome and desirable. In fact, there is also a need to establish a National Humanities Research Council on the lines of ICSSR and CSIR.

Yours etc.

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Financial Administration in Universities

The Association of Indian Universities, in collaboration with the University Grants Commission and the University of Poona, organised a Group Discussion-Cum-Orientation Programme on Financial Administration in Universities from June 6-10, 1988 at Pune. Dr. P. V. Salvi, Vice-Chancellor, Marathwada Agricultural University and the President, Association of Indian Universities inaugurated the programme. Dr. D. M. Nanjundappa, Vice-Chancellor, Bangalore University delivered the keynote address while Shri J. Veera Raghavan, Secretary, Ministry of Human Resource Development delivered the valedictory address.

After 5 days of deliberations, the following recommendations emerged.

(1) Funding and Release of Funds

(i) It was brought out that in case of Central, State as well as other universities, there are three stages before the funds are released by funding agencies, viz., approval in principle, sanction, and actual release of funds after submission of receipt in form TR-42. It was felt that this time lag can be considerably reduced. Once the sanction is issued, payment by draft/cheque should be made to the university concerned without the sending of form TR-42. On receipt of the amount, the university concerned should send the receipt in a prescribed form—which can be devised in consultation with the UGC, State Govt. and the funding agencies concerned. Similar procedure was suggested for the release of plan assistance also.

(ii) The question of matching contribution for the release of grant for specific purposes where universities concerned are required to meet equivalent amount or certain percentage thereof from their own resources, should be done away with. As the universities, being entirely dependent upon the grants from the funding agencies like UGC, State Government, etc., have no worthwhile source of their own income, it is often not possible to avail of such grants where the condition of matching contribution is insisted upon by the UGC. The grant for specific purposes should be released on 100% basis by UGC as education has now been brought on the Concurrent List.

(iii) The principles for working out Maintenance Grant for the universities, laid down by UGC in the Seventies, mention that whatever amount of money is left unutilized out of the maintenance grant after a triennium will be deducted from grants admissible in the fourth year. The system of such adjustment after three years seems arbitrary and not based on any sound logic. In view of the fact that a five year period has been adopted for plan financing, the system should be changed from triennium to quinquennium and any amount left unutilized at the end of 5 years due to circumstances beyond the control of the University/Institution concerned should not be deducted.

(iv) State Universities, Technical and Agricultural Universities which are mostly financed by the State, have accumulated deficits due to non-payment of legitimate and admissible expenditure in the past. Such deficits should be made up immediately by the concerned funding agencies.

Deemed Universities should also be provided adequate funds by UGC/State Governments.

(v) It has been the general experience that the amount of total annual maintenance grant to be received by the Institutes/Universities is made known only at the fag end of the financial year so a certain amount of uncertainty prevails about the actual availability and quantum of the final amount of grant. This is very bad from budgeting point of view. The University/Institute must know well in advance as to how much grant they are likely to receive so that they can plan their expenditure accordingly and avoid last minute rush of expenditure. At times, the ad-hoc cuts made at the last minute upset completely the budgeting process.

(vi) Utilisation Certificate is normally to be furnished after the accounts have been audited by the Statutory Auditors. There is normally a delay of about 9 months to a year on this account. Grant should not be withheld on this score and may be released on the basis of the provisional certificate issued by Finance Officer or the Registrar. A formal utilisation certificate can however be sent after the audit is over.

(2) Designation and Status of Finance Officers

(1) The work of Finance Officer in all the universities combines manifold functions like that of Chief Accounts Officer, Pay Master, Internal Auditor and/or Financial Adviser. The present designation does not fully reflect his functional operations. Most of the organizations like CSIR have Finance Officers, Sr. Finance Officers, Controller of Administration etc., and the designation of Finance Officer is that of a very Junior

Officer in the financial hierarchy. It is, therefore, necessary that his designation in all the universities should be changed to Financial Controller or Controller of Finance.

(ii) By the very nature of the work of the Finance Officer, it is essential that he should be independent and answerable to the Vice-Chancellor only. It came out in the course of discussion that Finance Officers in some universities are working under officers other than the Vice-Chancellor. This is highly unsatisfactory state of affairs as it impinges upon his role of independent advice. It was, therefore, recommended that the Finance Officers in all the universities should be directly under the Vice-Chancellor, and if his status is not equivalent to that of the Registrar, it may be brought at par with him.

(3) Membership of the Executive Council and Finance Committee

Under the Act/Statutes of various universities, the Finance Officers are the Secretary/Convener of the Finance Committee, but not its member. This is a paradoxical situation which has to be remedied by designating the Finance Officer the Member Secretary of the Finance Committee.

Similar situation obtains in respect of Executive Council/Syndicate where the Finance Officer is a permanent invitee but not a member of the Executive Council although all the items on the agenda involving financial implications involve Finance Officer and decisions are taken after taking his views/advice into account. It is, therefore, necessary that the Finance Officer along with the Registrar be designated as members of the Executive Council/Board of Management/Governing Body, etc.

(4) Interest on Short Term/Long Term Deposits

At times funds received from the funding agencies are not utilized for various reasons beyond the control of the Universities and therefore amounts are kept in short/long term deposits to earn whatever interest is available. Under the present system of maintenance grant, such interest is deducted from the maintenance grant after treating this as income of the university. As such interest is earned mainly because of alert, efficient and better financial management by the University concerned, it should not be deducted from the maintenance grant and should be left with the University. This can, however, be added to the depreciation fund for renewal, replacement or allowed to be used for other development purposes, etc.

(5) Training

(i) At present the staff available to Finance Officer in various universities are locally recruited without any proper screening and initial training or inservice training whatsoever. Consequently the staff available is quite often not upto the mark to render efficient and effective supportive role to the Finance Officer. A system must be evolved under which initial recruitment should be after proper screening. The accounts staff to be recruited must have some background in commerce or accounts. They should be given preliminary training coupled with on the job training. There should also be regular system of in-service training to keep them abreast of the latest accounting and management techniques.

(ii) The UGC has established Academic Staff Colleges all over the country where newly recruited teachers as well as other teachers are to be given re-orientation training in various aspects of their academic field. Since these very teachers become the Heads and Chairmen of the Departments and shoulder the responsibility of drawing and disbursing officers dealing with financial transactions, it is necessary that a short term course may be added on Finance and Accounts aspects for such teachers to enable them to discharge their duties as Heads/Chairmen more efficiently.

(iii) Ultimate aim should be to establish a Central Universities Administration Staff College where middle and high level Finance Department Officers along with the administrative staff may be imparted initial training and later on exposed to refresher and reorientation programmes.

(6) Computerisation

Due to growing complexities and increase in volume of accounting work, computerisation of finance and accounts department is becoming necessary. Moreover, the accounts are the basis for any effective information system. It is, therefore, necessary that the computers are introduced particularly in the field of finance and accounts which will ensure promptness, speed and an efficient management information system. It is recommended that for the smaller institutions/universities, PC AT and PC XT be provided and the larger universities be provided a regular computer for the finance department.

The expenditure involved in computerization should be met under the plan assistance or outside plan allocation as a special grant. Experience has shown that unless funds are provided for the total set up i.e. for the computer, air-conditioning, stabiliser, furniture and the technical manpower etc., the introduction of computer does not achieve the desired results.

(7) Depreciation Funds

Under the existing funding system, funds are given under plan grants for purchase of equipment, machinery, etc. and maintenance is provided through maintenance grant. But maintenance grant is not given for renewal and replacement of such equipment which has outlived its life or has become obsolete. Some Universities do manage small amount from maintenance grant for this purpose which is highly inadequate. With the technological advances and higher rate of obsolescence, it is necessary that adequate funds on certain definite principles are provided to universities to meet their requirements.

(8) Disincentive to Resource Mobilisation

The existing system serves as a disincentive to raising of resources by the universities. According to present practice, net grant is determined by reducing receipts from the sanctioned expenditure. If a university makes efforts and raises its earning/receipts, the result is that the grant of the university is correspondingly reduced. This system does not encourage the universities to raise their own resources. It is, therefore, suggested that if the university/institution raises additional resources by its own efforts, such additional resources should be given to the university for development purposes.

(9) Simplification of Forms and Procedures

No uniformity prevails in respect of various forms used in the universities for the drawal of advances and their adjustment, T.A. Bills, etc. It is highly important that the age old forms for various purposes used in Finance and Accounts Department are reviewed and simplified. The Panjab University has done some work in this regard. A sub-committee consisting of one representative each from the Central, State and other Universities could be entrusted with this task. This could lead to considerable saving in time and effort and the use of paper, etc.

(10) Office of Hon. Treasurer

In only three out of 10 Central Universities, there is an office of Hon. Treasurer who is elected by the Court/Senate. At times he is neither professionally trained nor has expertise in the field of financial administration. Finance Officer in a Central University is generally drawn from the organized accounts services of Government of India and is of a sufficiently high status. It is necessary that there should not be any interference in day-to-day administration and management of finance and accounts departments by such Hon. Treasurer. His role is of an advisory nature. Duality of authority and responsibility between the Finance Officer and the Hon. Treasurer must be avoided. Hon. Treasurer should be associated with the policy matters and he should not interfere in day-to-day administration of finance and accounts department which may be left to the care of the Finance Officer only.

(11) Finance and Accounts Manual

Most of the universities have not codified their Finance and Accounts rules. Such codification and preparation of a Finance and Accounts Manual with flexibility to absorb future changes and local situations, is essential for all institutions.

(12) Internal Audit

It is essential that each institute/university has a strong internal audit wing and wherever internal audit is not there, it should be introduced. Its role should *inter-alia* include management audit and financial review of the various schemes and projects of the university.

(13) Financial Information Systems

Introduction of proper Financial Information Systems for monitoring, control and meeting the information requirements at various levels is absolutely essential. This system should apprise the senior officers of the progress achieved against targets, the bottleneck areas, the progress of expenditure vis-a-vis the results achieved, and should meet the information requirements of various senior levels so that timely corrective action can be taken by them whenever necessary.

(14) Zonal Workshops

It was suggested that specialised workshops be conducted on zanal basis to make specialised study of various problems of the Finance departments of educational institutions. □

Women & Superstitions in Tamil Nadu

The Mother Teresa Women's University, Kodaikanal, has undertaken a study to understand and interpret precisely the different aspects of superstitious beliefs among the women in Tamil Nadu with a view to help them adopt a scientific behaviour pattern in their life style and make them shake off the menacing grip of society which tries to oppress through its narrow beliefs and deprives women in leading a full life.

The objectives of this study are : (1) To identify the different superstitious beliefs and practices existing among women; (2) To find out the influence of education and employment in relation to superstitious beliefs and practices; (3) To ascertain as to what extent these superstitious beliefs and practices affect women; (4) To define the various compelling forces that sustain the superstitious beliefs among women; (5) To find out what effect superstitious beliefs like sorcery and witchcraft have over the physical and mental health of women; and (6) To find out and ward off social evils in the guise of superstitious beliefs which prevent girls from getting married because of '*Chevoidosham*' and secluding the widows from social functions.

This study is exploratory-cum-descriptive. It is exploratory in the sense that it gains a new insight into the attitude of the people towards various beliefs. It is descriptive as it attempts to find out the extent to which these beliefs influence women's life.

A pilot study was conducted by interviewing 126 respondents from different religious groups. Out of 126 respondents interviewed, 44 per cent of them were Christians, 42 per cent Hindus and only 4 per cent Muslims. The study revealed that a large majority of Hindus (79%) practised supertisious beliefs whereas only 22 per cent of Christians practised the same. Among the Muslims it was 37 per cent. From this data it is clear that supertitious beliefs are more prevalent among Hindus than other religious groups.

Observation of superstitious beliefs varies according to the age of the respondents. Out of the 126 respondents 37 per cent belonged to the age group of 18 to 27, 38 per cent were above 48 years old and the rest were in the age group of 28 to 47 years. When the observation of superstitious beliefs was examined in relation to the age it was observed that out of 60 (48%) respondents who observed superstitious beliefs 41.7%, i.e. 25 out of 60, belonged to the age group of 18 to 27. Only 10% i.e. 6 out of 60, belonged to 48 years and above. Thus it is quite significant that superstitious beliefs are quite common among younger generation than the older generation.

When the observation of superstitious beliefs among the various age groups was examined in relation to their religion, it was revealed that out of 41 Hindu respondents who believe in superstition, 41.5 per cent belong to the age group of 18 to 27 years. But only 12.2 per cent of them were in the age group of 48 years old and above. Among the Christians out of 12 respondents 50 per cent belonged to the age group of 18 to 27, whereas only 8.3 per cent were in the age group of 15 years and above. Just like the Hindus, the younger Christian generation is also giving more importance to superstitious beliefs than the older generation. When it comes to Muslims out of 7 who observe superstitious beliefs 42.9 per cent belonged to the age group of 38 to 47, whereas only 28.6 per cent of them belonged to the age group of 18 to 27. It is interesting to note that none of them is above 48 years. Basically the younger generation of the Christians and the Hindus are more caught up with superstitious beliefs when compared to the older generation.

Observation of superstitious beliefs may vary according to the educational level. When the educational qualifications of the respondents were examined, it was found that 36.5 per cent of the respondents had undergone primary education, 28.5% were illiterate, 27.8 per cent had high school education and only 7.2 per cent respondents had college education. When the educational qualification was examined in relation to religion, it was found that 41.5 per cent of the Hindu respondents i.e. 17 out of 41 who were illiterates observed superstitious beliefs whereas only 9.8 per cent of the Hindu respondents with college education observed superstition. Among Christians also the same trend was found i.e. 43.3 per cent respondents from Christian religion who were illiterates observed superstitious beliefs and only 8.3 per cent college educated Christians believed in superstition. Among Muslims, a good majority who believed in superstition are illiterate and this clearly demonstrates that illiterate people are more superstitious than literates, irrespective of religion.

The study concluded with the following findings :

(1) The Hindus are more superstitious than the Christians.

(2) Younger generation is more superstitious than old generation.

(3) Illiterates are more superstitious than educated. □

International Workshop on Folklore

Inaugurating the first-ever international workshop on folkloristics hosted by the M.G.M. College, Udupi and sponsored by the Ford Foundation under the auspices of the Regional Resource Centre, Prof. Frank Corem of the Pensylavannia University said that the folklore had attained a status of a science and was spreading its charm throughout the world. He highlighted the special feature of this workshop as intended to establish an international dialogue among folkloristic of different nations. The workshop, he said, looks upon folklore as a cultural phenomenon, to be studied with the aid of several disciplines such as social linguistics, anthropology, history of religion and literature. The workshop is designed to make Indian studies in folklore more relevant and amenable to international researches in the subject. The ultimate goal was not only to preserve, publish and review dying folklore, but also to study and promote modes of change and transformation of tradition in modern society, he said.

Dr. K.M. Safeeulla, Vice-Chancellor of Mangalore University who was the chief guest, commended the work done by R.G. Pai Research Centre and Regional Resource Centre of M.G.M. College as centres of area studies in languages and folklore. Mangalore University, he said, took credit for these centres of excellence and all other institutions conceived and concretised by the educational pioneers of Manipal in the Mangalore University area. He expressed his happiness over the conduct of the workshop and said his university would render all the help to it.

Dr. Peter J. Claus, a renowned scholar of the folklore, said that the time had come for the scholars of the folklore to lead the art into future development through acquiring a thorough knowledge of the art. Narrating his experiences as a research of folklore in India, he said that folklore was a common feature of all nations and cultures and folkloristics had been developing as a new discipline in the U.S.A. in the last 25 years. As an international discipline, folkloristics had brought out certain universal theories and concepts. He envisaged a high level of attainment in folkloristics by Indian scholars, with their rich heritage of folklore, and pointed at the vast opportunities opening up in the Universities of U.S.A. for students and researchers of folkloristics and participating in such workshops.

Presiding over the function, Mr. T. Ramesh U. Pai, Registrar, Academy of General Education, called on the folklore artists and scholars to work hand in hand and develop the art. Sri Pai stressed the potentialities of folklore as a subject which can bring about international understanding. He pleaded for education designed for a good and happy life rather than mere jobs. In this connection, he suggested the opening of new university courses of study, such as Yakshagana, dramatics, sports and games.

Prof. K.S. Haridasa Bhat, Hon. Director of Regional Resource Centre, outlining the purpose of the workshop, stated that it aimed at evolving an international prospective and universal methodology for the study of folklore in Karnataka, with the aid of international experts in folkloristics. Besides regular lectures and discussions, he said, the workshop would include a few public lectures and audiovisual demonstrations of folklore.

Futurology Awareness Programme

A three-day seminar on "Futurology Awareness Programme" was held at the Department of Education, Alagappa University, Karaikudi, Tamil Nadu. Sponsored by the Department of Science & Technology, Government of India, New Delhi, the seminar was attended by over 50 college and university teachers at which more than 15 experts from all over India presented their papers. Dr. (Mrs.) Radha Thiagarajan, Vice-Chancellor, Alagappa University inaugurated the seminar and Dr. S.C. Seth, Head, Department of Science and Technology, Government of India, New Delhi delivered the keynote address.

The seminar discussed the following themes: Future development scenario and forecasting parameters, Effects of social change and future demands on education, Future imbalances and strain in education, Promising solution for the future and forecasting techniques, Differential effects of alternative solutions for future perspectives, and Evaluation of net consequences of alternative solution.

After 3 days deliberations the following recommendations emerged :

(1) Study of Futurology should be introduced at all levels.

(2) Centres for Interdisciplinary Studies should be set up at the universities with the following objectives:

(a) To promote future consciousness among students, teachers and the public; and

(b) To promote teaching, research and extension work in addition to relevant publication. This can later become Futurology Research Centre.

(3) All State Governments should set up a Futurology Centre on the lines of Australian Commission of Future. This centre shall organise training programmes, workshops, lectures, exhibitions, films and slide shows to create future consciousness in the university campus and the nearby public.

(4) All universities should prepare suitable literature in regional languages in view of the scarcity of relevant literature on various techniques and methodology of futurology.

(5) Various programmes of adult education should be organised in collaboration with other departments and the centre of futurology.

Promoting Research in Superconductivity

The Union Government has allocated Rs. 12 crore for research in the rapidly developing hi-tech realm of superconductivity. The funds will be for improving infrastructure, carrying out competitive research and the developing capabilities in the technology applications area. The Indian Institutes of Technology (IITs), Tata Institute of Fundamental Research, Indira Gandhi Centre for Atomic Research, the Indian Institute of Science (IISc) and Bhabha Atomic Research Centre (BARC) are among the organisations that would participate in these efforts.

The funds follow recommendations in the form of priority programmes drawn up by the national superconductivity Programme Management Board (PMB) led by Prof. C.N.R. Rao, who also heads the Prime Minister's Science Advisory Council. Spelling out the details of the programmes Prof. Rao said some centres would exclusively work on making thin films, wires or tapes while a few others would concentrate on synthesis of new materials and their characterisation. Some others would make prototype devices.

Prof. Rao said at the IISc, his team had discovered super-conductivity in some systems between 200K and 280K (minus 73 degrees to seven degrees Celsius). These were stable and reproduceable but were not pure compounds, "We have to isolate (the compounds) and find conditions to make them," he added.

The team also discovered an unusual property of superconducting systems. These substances were found to absorb electromagnetic waves, opening new avenues to more applications in different spheres, including defence. He felt that current density or the current carrying capacity of superconducting system and not their brittleness was the "real problem" confronting scientists. High, very good and stable current density had remained elusive.

While the phenomenon of superconductivity occurs at very low temperatures, efforts by researchers to achieve this at room temperature hold out exciting possibilities that could refashion many an invention. Energy transmission networks, trains, computers, nuclear reactors, ships and medical facilities would undergo a sea change with the evolution of such superconducting systems.

Central Assistance for Calcutta University

The Calcutta University, it is learnt, will soon start a number of courses and research projects that will help local students to develop their knowledge of modern science and technology. According to Dr. Partha Sarathi Chakrabarti, Deputy Registrar (R & D), a special course on atmospheric science would be introduced at the post-MSc level. Under this, a chapter on air pollution and atmospheric chemicals would deal with air-pollution measurements, remote sensing procedures and satellite or aircraft-based sensors.

Among research projects, the University Grants Commission (UGC) has approved a financial assistance of Rs. two lakhs for research and development of superconductivity. The UGC has also granted a special assistance of Rs. 12.5 lakhs for modernisation and research work in different thrust areas.

Dr. Chakrabarti said the funds for superconductivity will be used mainly to create centres of excellence in superconductor research and development. He said the university's department of applied physics has been identified to implement the project.

The main objective of this ambitious superconductivity research programme is to organise national efforts involving several institutions, ranging from the Bhaba Atomic Research Centre to laboratories of the Council of

Scientific and Industrial Research. The programme management board also aims to create sufficient manpower and involve young scientists. More than 100 fellowships will be offered to those specialising in superconductor technology.

MBA Course in Public Systems Management

Delhi University proposes to start a two-year full time M.B.A. course in Public Systems Management from July. It will be conducted at the S.P. Jain Advanced Management Research Centre of the Faculty of Management Studies, South Delhi Campus.

Prices & Planning in India

Prof. Y.K. Alagh, Member Planning Commission, Government of India and former Chairman of the Agricultural Price Commission delivered a special lecture on **Prices and Planning in India** on the occasion of birth centenary celebrations of Dr. Anugrah Narayan Singh at the A.N. Sinha Institute of Social Studies at Patna. In order to give an investment thrust, shift in new direction is neeessary and India has to align her prices with other countries of the world. Industrial policy is a result of many policies like protection, licensing, etc. If we want rapid industrialisation we may ignore the regional policy, said Prof. Alagh. He also observed that structural change is necessary. He quoted examples of Punjab, Haryana, Maharashtra and Karnataka where cumulative effect of industrialisation is visible. In many parts of the country like Bihar, impact of structural change is not visible. In order to have faster structural change we must create 2 thousand industrial jobs in the area and this will have a cummulative effect on rural development. He reiterated that our industry is not inefficient so far the production of machinery and engineering goods are concerned. In order to have rapid industrialisation we must adopt a price policy for the deficient areas. Quality prodution incentive should be given to farmers. He dwelt upon the elasticity of energy consumption to capacity utilisation. He quoted examples of levy cement and open market price of cement and concluded that a 10% increase in capacity utilisation leads to a 10.28% decrease in electrical power consumption per tonne of cement. Similarly a 10% increase in capacity utilisation leads to a 6.43% decrease in thermal power consumption in the economy. On the basis of figures and data, he proved that improved capacity utilisation is a powerful tool of energy conservation. A 10% improvement in capacity utilisation will lead to a saving of 85MW of power capacity and 7.12 lakh tonnes of coal annually.

News from Agril. Varsities

Anatomy of Ruminants' Reproduction

Dr. M.B.L. Bhardwaj, Ex-Vice-Chancellor, C.S. Azad University of Agriculture & Technology, Kanpur delivered the inaugural address at the National Symposium on Recent Advances in Anatomy of Ruminants' Reproduction recently organised by Veterinary Science College of the Haryana Agricultural University. He said that higher goals of increasng the production efficiency of our livestock is not only necessary for milk and meat production but also to fulfil our national aims of increasing nutritive food production, generating rural employment, ensuring maintenance of ecological balance and conservation of natural resources. Complimenting the anatomists of HAU for the high standard of research, he said this was the first time that a prestigeous national award was bagged by Veterinary Anatomists from amongst other scientists of para-clinical and clinical disciplines of Veterinary Sciences, different disciplines of Animal Sciences, and different disciplines in Agriculture.

Presiding over the function, Dr. Mahender Singh, Director of Research of HAU said that, as we were living in very momentous times of scientific development when far reaching changes are taking place, the scientists must update their knowledge and expertise. He lauded the HAU scientists for the breakthrough in embryo transfer technology and said that only thorough knowledge of embryology/foetal morphology had helped us to achieve this. He further said that we should have specialised centres of fundamental research for subjects like embryology and teratology, cytogenetics, histoenzymology, etc. The old frontiers of Anatomy, have long since faded and research workers often needed training in a number of related disciplines. These days the diseases are diagnosed and treated at the molecular level so our research programmes have also to be oriented and geared up in that direction.

About 60 delegates from all

over the country attended the symposium.

'Punjab Narma 886'

The State Variety Approval Committee, which met at the Punjab Agricultural University under the Chairmanship of Mr. Sukhdev Singh, Director of Agriculture, Punjab, has approved a new variety of American Cotton—'Punjab Narma 886' for general cultivation in the State. This variety has been developed by a team of cotton researchers led by Dr. T.H. Singh, Senior Cotton Breeder in the Department of Plant Breeding of the University.

According to Dr. T.H. Singh this new variety has bigger bolls and is early in maturity than other varieties by about a week and thus its picking would be easier and the timely sowing of wheat would be possible. The ginning outturn of this variety, which reflects the recovery of lint is about 2 per cent more than that of F 505 variety as a consequence of which it would be purchased by the traders at a premium price thereby benefitting the growers. On account of its higher yield and better ginning outturn, 'Punjab Narma 886' yields 31 per cent more lint than F 514, 26 per cent more than F 286 and 16 per cent more than F 505. On the basis of the trials conducted during the past eight years, it has been established that this new variety has a potential to yield upto 15 quintals per hectare.

News from UGC

INSAT-1B Programme of UGC

Between 11th July to 20th July, 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

11.7.88

"Miro-physics and the Macro-Universe-I"

"Raw Materials—Tin"

"Integrated Approach Towards Plant Growth"

12.7.88

"Teleteach—VI"

"Frontier Topics in Biology-Mapping of Chromosomes"

13.7.88

"X-ray Crystallography-Recent Trends"

"Mummy Seal"

"Only in the Mating Season"

14.7.88

"Introduction to COBOL-VI"

"Shooting the Moon"

"Sea Shells"

15.7.88

"Why e ?"

"Public Interest Litigation"

"Red Wolves Return to Nature"

16.7.88

"Hockey"

"History of Clothing-VI-Synthetic"

17.7.88

No Telecast

18.7.88

"Microphysics and the Macro-Universe—II"

"New Life for old Books"

"High Density Agro Forestry"

19.7.88

"Teleteach—VII"

"Frontier Topics in Biology-Cencer Metastasis"

20.7.88

"Conserve Energy"

"Wandering Continents"

"Cardiovascular Control"

We Congratulate . . .

1. **Shri S.P. Varma who has taken over as Director of the Dayalbagh Educational Institute (Deemed University), Agra.**
2. **Dr. Rajammal P. Devadas who has been appointed as the first Vice-Chancellor of the Avanashilingam Institute of Home Science and Higher Education for Women (Deemed University), Coimbatore.**

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertations as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A List of Research Scholars Registered for Doctoral Degrees of Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Gopal, Sarangthem. *Saminar flow problems of drug reducing fluids.* Manipur.

2. Karmarkar, Bholanath. *Ion-acoustic solitary waves in multicomponent plasma.* Manipur.

3. Mairenbam, Bina. *Topological group.* Manipur.

4. Singh, Irom Tomba. *Impact of migration on population growth of Manipur.* Manipur.

5. Singh, Samdram Surachandra. *Waves in plasmas.* Manipur.

6. Singh, Thingbaijam Manihar. *A study of operators and fixed points.* Manipur.

Physics

1. Datta, Aditi. *Thermally stimulated luminescence study of some minerals.* Manipur.

2. Helenbi Devi. *Phenomenology of bio. E.M.F. generation.* Manipur.

3. Kamble, P.N. *A study on physical properties of mixed ferrite system, Cdx Col x Fe 204.* Shivaji. Dr. A.S. Vaingankar, Reader, Department of Physics, Shivaji University Kolhapur.

4. Singh, S. Joychandra. *Thermally stimulated luminescence of some solids irradiated by X or Y Rays.* Manipur.

5. Singh, Sanasam Brajamani. *Studies in the dynamics of non linear physical system.* Manipur.

6. Subodhchandra. *Thermally stimulated luminescence (TSL) of some solids.* Manipur.

Chemistry

1. Antony, Asha T. *Studies on nucleophilic substitutions of acid chlorides.* Kerala. Dr. M. Raisekharan Nair, Department of Chemistry, University of Kerala, Trivandrum.

2. Bhagavathy, V. *Concentration, separation and determination of trace amounts of neodymium and samarium* Kerala. Dr. T. Prasada Rao, Scientist, Regional Research Laboratory, Trivandrum.

3. Chavan, R.B. *Modelling of gas solid catalytic reactions.* Shivaji. Dr. B.C. Kulkarni, - Asstt. Director, Chemical Engineering Division, National Chemical Laboratory, Pune.

4. Ghugikar, V. G. *Studies in catalytic slurry and trickle bed reactors.* Shivaji. Dr. R.V. Chaudhari, Asstt. Director, Chemical Engineering Division, National Chemical Laboratory, Pune.

5. Jayakumar, K.P. *Kinetics of solvolysis of 1,2 diphenylethyl chlorides*. Kerala. Dr. M. Rajasekharan Nair, Prof., Department of Chemistry, University of Kerala, Trivandrum.

6. Jesy, R. *Studies in sulphur nitrogen heterocyclic compounds.* Kerala. Dr. C.P. Joshua, Prof., Department of Chemistry, University of Kerala, Trivandrum.

7. Kuncheria, Babu. *Studies on some coordination compounds of thorium (IV) nitrate*. Kerala. Dr. P. Indrasenan Reader, Department of Chemistry, University of Kerala, Trivandrum.

8. Nair, Sheela P. *Chemical examination of some Indian medicinal plants*. Kerala. Dr. J. Madhusoodana Rao., Scientist, Regional Research Laboratory, Trivandrum.

9. Nikalje, D.D. *Studies in multiphase catalytic reactions*. Shivaji. Dr. R.V. Chaudhari, Asstt. Director, Chemical Engineering Division, National Chemical Laboratory, Pune.

10. Raj, C. Mercy. *Studies on some thiocyanato and selenocyanato complexes*. Kerala. Dr. C.P. Prabhakaran, Prof., Department of Chemistry, University of Kerala, Trivandrum.

11. Singh, Brojendra. *Chemical investigations of certain medicinal plants of Manipur*. Manipur.

12. Singh, L. Nadabir. *Thermo-chemistry of organotine complexes*. Manipur.

13. Singh, N. Rajen. *Outer sphere ion association and stability of metal III complex*. Manipur.

14. Singh, Raghumani. *Studies on surfactant mediated chemical reactions and applicability of enzyme catalysis modes*. Manipur.

15. Sobhana Devi, G. *Studies on some Schiff base complexes of uranyl nitrate*. Kerala. Dr. P. Indrasenan, Reader, Department of Chemistry, University of Kerala, Trivandrum.

16. Sudha Devi, R. *Kinetic studies of malonic esters of tertiary alcohols in aqueous organic solvents*. Kerala. Dr. K. Saramma, Prof., Department of Chemistry, University of Kerala, Trivandrum.

17. Sujatha, P.C. *Coordination complexes of some polydentate ligends*. Kerala. Dr. C.P. Prabhakaran, Prof., Department of Chemistry, University of Kerala, Trivandrum.

18. Sujatha, T.S. *Studies in sulphur nitrogen heterocycles*. Kerala. Dr. C.P. Joshua, Prof., Department of Chemistry, University of Kerala, Trivandrum.

19. Uthale, A.C. *Synthesis of some new oxazines and thiazines*. Shivaji. Dr. M.B. Hogale, Department of Chemistry, Shivaji University, Kolhapur.

Earth Sciences

1. Bijayanti Devi, W. *Reappraisal of geo-resources with special reference to environment in management and water resource development in Imphal and Bishnupur District, Manipur*. Manipur.

2. Binodini Devi, L. *A study of rock structure and associated geotechnical problems in area around Moreh, District Chandel, Manipur*. Manipur.

3. Pataskar, Asnam Prasad. *A study of geology, hydrology, geohydrology and ground water availability for the area around Bajna-Baxware, District Chhatarpur. M.P.* HS Gour. Dr S.K. Misra.

4. Phajabi Devi. *Integrated rural area development planning for Thoubal District, Manipur*. Manipur.

5. Phajabi Devi, Y. *Geomorphic analysis of the Barak River Basin in Manipur*. Manipur.

6. Ranjit Singh. *Petrology and petrochemistry of rocks in Moreh area, Chandel District, Manipur*. Manipur.

7. Shah, Mohammad Islauddin. *Fluvial geomorphology of the Manipur Valley*. Manipur.

8. Singh, L. Dinachandra. *Geotechnical investigation into landside problems along Imphal Dimapur Road*. Manipur.

9. Singh, N. Kunjabihari. *Some studies relating to diurnal variation of air temperature and solar radiation over Manipur*. Manipur.

10. Singh, Y. Kaoba. *Some studies relating to meteorological impact on agriculture and forestry in Nagaland, Manipur and Mizoram*. Manipur.

BIOLOGICAL SCIENCES

Biochemistry

1. Jhamb, Anju. *A biochemical study of the effects of hathyogic practices in the control and management of Diabetes mellitus*. Panjab. Dr. D.D. Bansal, Department of Biochemistry, Panjab University, Chandigarh, Dr. R.K. Sethi. Department of Biochemistry, Panjab University, Chandigarh and Dr. Rakesh Giri, State Yoga Organiser, Govt. Health Organisation, Sector 23, Chandigarh.

2. Satwekar, M.M. *Studies of structure and function of human heart procoagulant*. Shivaji. Dr. N.B. Patil, Department of Chemistry, Shivaji University, Kolhapur.

Marine Biology

1. Anantha Krishnan, P. *Some studies on the ecobiology of Kayamkulam Lake, South West Coast of India*. Kerala. Dr. Tresa V. Fernandoz, Lecturer, Department of Aquatic-Biology and Fisheries, University of Kerala, Trivandrum.

2. Darsana, R. Anita Nair. *Some studies on the effect of heavy metal pollutants on estuarine fishes with particular reference to copper and zinc*. Kerala. Dr. Tresa V. Fernandoz, Lecturer, Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

3. Jameela, T. *Studies on the ecobiology of Tnengappatranam Estuary with particular reference to heavy metal pollution monitoring aspects*. Kerala. Dr. Tresa V. Fernandoz, Lecturer, Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

4. Joseph, Mary. *Studies on the effect of heavy metals on estuarine fishes with particular reference to lead and iron*. Kerala. Dr. Tresa V Fernandoz, Lecturer, Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

5. Kahar, A. *Studies on sewage pollution in the Poonthra back water, South India.* Kerala. Dr. P.K. Abdul Aziz, eader, Department of Aquatic Biology and Fisheries, Jniversity of Kerala, Trivandrum.

6. Meena Kumari, S.S. *Studies on some cultural aspects f selected carps.* Kerala. Dr. C.M. Aravindan, Reader, Department of Aquatic Biology and Fisheries, University of erala, Trivandrum.

7. Nair, Maya K. *Aryluslfatase enzyme activity of bacteia fish and shell fish of Vali Lake, Kerala.* Kerala Dr. K. Dhevendran, Reader, Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

8. Rama Devi, V. *Studies on hazardous wastes in crabs in the polluted ecosystems of Kerala.* Kerala. Dr. P.K. Abdul Aziz, Reader, Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

9. Sreelatha, K.S. *Studies on Estuarine clam Villorita sp.* Kerala. Dr. C.M. Aravindan, Reader, Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

10. Sumangala Kumari, K.S. *Studies on heavy metal toxicity on B-glucosidase producing microorganisms along Titanium plant and Velilake regions.* Kerala. Dr. K. Dhevendran, Reader, Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

11. Sunil, M.S. *Studies on ecobiology of certain isopods of the South West Coast of India.* Kerala. Dr. H. Suryanarayanan, Reader, Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

Zoology

1. Dhembare, A.J. *Studies on integrated control of safflower insect pests in Deccan canal region of Maharashtra State.* Shivaji. Dr. C.D. Basarkar, Entomologist, Nimbkar Agricultural Research Institute, Phaltan.

2. Koshti, A.P. *Exercise induced physiological changes in endurance capacity of Indian women.* Shivaji. Dr. V.A. Sawant, Department of Zoology, Shivaji University, Kolhapur.

3. Muthane, A.A. *Physiological evaluation of workers in textile industry in Ichalkaranji.* Shivaji. Dr. V.A. Sawant, Department of Zoology, Shivaji University, Kolhapur.

Agriculture

1. Mishra, Satyendra Prasad. *Physiological relationship between source and size in rice : The effects of panicle removal of assimilate redistribution and other physiological changes.* Sambalpur. Dr. P.K. Mohapatra, Reader, Department of Life Sciences, Sambalpur University, Burla.

Medical Sciences

1. Luwang, Nimachand, *A case study of growth fattering of exclusively breast fed infants in Manipur.* Manipur.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Lakshmi, Bachu. *On some aspects of certain ordered algebras.* Berhampur. Prof, Nanda Kishore, Department of Mathematics, Berhampur University, Berhampur.

2. Uma Devi, Satagopam. *Application of group theory to some physical problems.* Andhra.

Statistics

1. Krishna Reddy, M. *Weak convergence of generalized multidimensional empirical processes for non-stationary strong mixing sequences and their application to asymptotic normality of linear multivariate rank statistics.* Osmania.

Physics

1. Bhattacharyya, Keya. *On some aspects of two-dimensional electron transport in semi-conductors.* Calcutta.

2. Chattopadhyay, Prajnan. *Some studies on metal insulator-semiconductor (MIS) Tunnel Schottky barrier diodes.* Calcutta.

3. Kurmanadha Sarma, Tanikella Venkata. *Spectroscopic investigations of certain substituted benzo-nitriles acetophenones and benzylbromides.* Andhra.

4. Mehta, Satish Kumar. *Theoretical and experimental studies on the characteristics of back surface field silicon solar cells.* Delhi.

5. Mitra, Mukul Kumar. *Determination of order parameters of liquid crystals from birefringence x-ray and magnetic anisotropy studies.* NBU.

6. Murthy, Y.V.S. *Development of computer aided techniques in processing and interpretation of landsat data in mineral exploration in Goa and Zawar, Rajasthan areas and design and fabrication of remote sensing equipments.* ISM. Prof. R. K. Verma, Department of Applied Geophysics, Indian School of Mines, Dhanbad and Dr. K. Mallick, Indian Institute of Technology, Bombay.

7. Pradhan, Damodar. *Transverse vibration of tapered beams under lateral impact.* Sambalpur. Dr. Kampal Mishra, Prof., Department of Physics, Sambalpur University, Burla.

8. Ramana Rao, Barry Venkata. *Study of ionospheric electron content and amplitude scientiallations during high and low solar activity periods.* Andhra.

9. Ramesh, Kanchumarthi Satya. *Some studies on the dynamics of the nocturnal Fo region of the ionosphere over Waltair.* Andhra.

10. Ray, Apurbakumar. *Statistics of self-avoiding walks on random lattices.* Calcutta.

11. Singh, Konsam Biren. *An investigation on the electronic transport properties of some thin metallic films.* Manipur. Dr. H. Nandakumar Sharma, Senior Fellow, Department of Physics, Manipur University, Imphal.

12. Srivastava, Abhaya Prakash. *Fission track studies of authigenic sedimentary mineral glauconite and its applications to date lower vindhyan deposits.* Kurukshetra.

13. Suryanarayana Rao, S. V. *Comparison of different electrode configurations in resistivity profiling over some local bodies by modelling with special reference to newely introduced 'T' shaped array.* Osmania.

14. Tiwari, Sandhya. *Comparative study of chromite deposits of Bihar and Orissa with special reference to petromineralogy ore genesis and mineral economics.* Vikram. Dr. K.K. Singh, Head, Department of Physics, Vikram University, Ujjain.

Chemistry

1. Behera, Sarat Kumar. *Geochemistry of the precambrian banded iron formation of the Kolar Schist Belt, Kernataka.* JNU. Prof. V. Rajamani.

2. Dharam Vir. *Heterocyclic compounds—synthesis of some as potential antiinflammatory and anthelmintic agents.* Kurukshetra.

3. Dubey, R.P. *A kinetic study on the oxidation of some ketones by N. bromobenzamide.* Vikram. Dr. S.K. Solanki, Head, Department of Chemistry, Vikram University, Ujjain.

4. Gokak, Dattatraya Tammannashastri. *Some studies on catalyst preparation characterization and catalytic behaviour of polymer supported metal chelates.* Baroda.

5. Jain, Rama. *Synthesis and characterisation of some bimetallic complexes.* Rajasthan. Dr. R.C. Mehrotra, Department of Chemistry, University of Rajasthan, Jaipur and Dr. A.K. Rai, Department of Chemistry, University of Rajasthan, Jaipur.

6. Kaushik, Beena. *Coordination chemistry: Study of some metal derivatives of triazoles, triazine and their schiff bases.* Kurukshetra.

7. Krishna Ram, T. *The influence of organic addition agents on the electrodeposition of tin/lead alloy for printed circuit boards.* Osmania.

8. Ozha, Mamta. *Studies on development and performance of simple disinfectors for rural drinking water supply.* Durgawati. Dr. C.V.P. Pillai, Prof., Engineering College, M-56 Harshwardhan Nagar, Bhopal.

9. Pande, Jyoti. *Studies of some dibenzoidazepine and related compounds.* Rajasthan. Prof. B.C. Joshi, Department of Chemistry, University of Rajasthan, Jaipur.

10. Sai. Prasad Rao, K. *Studies on tungsten based hydroprocessing catalysts.* Osmania.

11. Saradamba, Garimella Venkata. *Kinetics of some electron transfer reactions of iron (III) 2,2'—Bipyridyl complex.* Andhra.

12. Satyanarayana, Ponnada. *Spectrophotometric determinations for some organo sulphur compounds.* Andhra.

13. Singh, Laitonjam Warjeet. *Synthetic and mechanistic investigations on popularized ketene dithioacetals for the development of newer synthetic methods.* NEHU. Prof. H. Junjapa, Head, Department of Chemistry, North Eastern Hill University, Shillong.

14. Siriya, V.K. *Kinetic and mechanistic study in the oxidation of primary alcohols by N-bromobezamide.* Vikram. Dr. V.R. Shastri, Head, Department of Chemistry, Vikram University Ujjain.

15. Tripathy, Narendra Kumar. *Some physico chemical studies on copper and zinc containing mixed hydroxylapatites* Sambalpur. Dr. Antaryami Panda, Department of Chemistry, Sambalpur University, Burla.

16. Verma, Ajay Kumar. *Studies on degradation of high polymers.* Kurukshetra.

17. Yadav, Jai Bhagwan. *Study of some copolymer-homopolymer interactions and formation of intermacromolecular complexes.* Delhi.

Earth Sciences

1. Agrawal, Jag Mohan. *Submarine terrain evaluation in Bay of Bengal Nizampatnam Bay of the Sandheads.* ISM. Prof. V.D. Choubey, Head, Department of Applied Geology, Indian School of Mines, Dhanbad and Dr. D. S. Rao, Dehradun.

2. Tiwari, Onkar Nath. *Multilevel geologic remote sensing of Aravalli region.* Delhi.

Engineering & Technology

1. Dhara, Debasis. *Some studies on the role of auxiliaries in the high temperature high press dyeing of polyester fibres.* IIT Delhi. Prof. M.L. Gulrajani, Department of Textile Technology, Indian Institute of Technology, New Delhi.

2. Rakshit, Sudip Kumar. *Modelling and optimization of cellulase production using a mutant of Trichoderma reesei.* IIT Delhi. Dr. Vikram Sahai, Biochemical Engineering Research Centre, Indian Institute of Technology, New Delhi.

3. Singh, Pravesh Kumar. *Economic analysis of underground and opencast systems of coal mining.* ISM. Prof. S.K. Bordia, Indian School of Mines, Dhanbad.

4. Sulekh Chand. *A study of the behaviour of conrolled synchronous machines connected to series compensated transmission systems.* Kurukshetra.

5. Thampuran, Nirmala. *Quantitative and qualitative studies on the bacteriology of frozen fishes and prawns'.* CUST. Dr. K. Gopakumar, Joint Director, Central Institute of Fisheries Technology, Cochin.

इन्दिरा गाँधी राष्ट्रीय मुक्त विश्वविद्यालय

INDIRA GANDHI NATIONAL OPEN UNIVERSITY

Admission to Diploma in Creative Writing in English

January, 1989

(Entrance Test : September 18, 1988)

Indira Gandhi National Open University, an autonomous institution set up under an Act of Parliament, invites applications for admission from the eligible candidates for entrance test to be held on Sunday the 18th September, 1988 for admission to its 'Diploma in Creative Writing in English' (1989). The basic task of the Indira Gandhi National Open University is to advance and disseminate learning and knowledge by a diversity of means including the use of modern communication technology. In the process, it has to increasingly aim at democratisation of higher education and maintenance of high quality, covering larger segments of population, vocations and professions. Alongwith this, it has to encourage and strengthen the open and distance education systems in the country.

1. Who should apply ?

This programme is open to anyone who is 25 years and above in age as on January 1, 1989, and has a genuine attitude for imaginative writing and needs professional guidance for achieving publication/ recognition. The essential requirement for this programme is that a candidate should be able to demonstrate reasonable competence in the use of the English language.

2. What is the Entrance Test ?

For this purpose, an Entrance Test will be held on September 18, 1988 which will contain reflective type questions aimed at assessing the creative potential of each candidate. Those who qualify in the Entrance Test will be offered admission by the University as per criteria laid down by it. The test will be available only in the English medium.

A list of examination centres is given below. You are required to indicate your First Choice and Second Choice in the relevant columns given in the application format. The examination centre once chosen shall not be changed.

Code No.	Name of the City	Code No.	Name of the City
			Delhi-DLH
0101	Hyderabad-Kandaswamy Lane	0701DLH	Raja Garden
		0703DLH	Dhaula Kuan-Venkateswara College
0107	Hyderabad-Uppal		
0102	Tirupati		
0103	Vijayawada	0704DLH	DU Area
0104	Guntur	0707DLH	Jamia Nagar
0105	Warangal	0708DLH	Ajmeri Gate
0106	Anantpur	0709DLH	Dhaula Kuan RL College
0201	Port Blair		
0301	Itanagar	0710DLH	Kalkaji
0401	Guwahati	0711DLH	Hindu College
0501	Patna	0712DLH	Vivek Vihar
0502	Jamshedpur	0801	Margoa
0503	Dhanbad	0901	Ahmedabad
0504	Muzaffarpur	0902	Vadodara
0505	Bhagalpur	0903	Rajkot
0506	Ranchi	1001	Kurukshetra
0601	Chandigarh	1003	Panipat
1006	Faridabad	1005	Rohtak
1101	Shimla	2108	Sambalpur
		2201	Jallandhar
1102	Mandi	2202	Amritsar
1103	Solan	2301	Jaipur
1201	Jammu-Tawi	2302	Udaipur
1202	Srinagar	2303	Kota
1301	Bangalore	2304	Jodhpur
1302	Mangalore	2305	Bikaner
1303	Dharwad	2306	Ajmer
1401	Trivandrum	2401	Pondicherry
1402	Cochin	2501	Madras-Tharamani
1501	Bhopal	2505	Madras-IIT Campus
1502	Jabalpur	2502	Coimbatore
1503	Durg	2503	Madurai
1504	Gwalior	2504	Tiruchirapalli
1505	Bilaspur	2601	Gangtok

1506	Indore	2701	Lucknow
1508	Rewa	2702	Agra
1601	Bombay	2703	Allahabad
	Vidyanagari Kalina	2704	Bareilly
1602	Muland	2705	Dehradun
1603	Pune		
1604	Bombay	2706	Kanpur
1605	Satara	2707	Modinagar
1606	Kolhapur	2708	Varanasi
1607	Nagpur	2709	Gorakhpur
1701	Imphal	2710	Sultanpur
1801	Shillong	2711	Haldwani
1901	Aizawl	2712	Jhansi
2001	Kohima	2713	Aligarh
2101	Bhubaneshwar		
2102	Cuttack		Calcutta-CAL
2103	Rourkela	2801CAL	Prajananda
2104	Berhampur	2803CAL	Kanchrapara
2105	Angul	2804CAL	Ashwani Dutta Memorial Centre
2106	Balasore		
2107	Bolangir	2901	Agartala

(Note : If the situation so warrants, some of the listed Centres may be dropped and the candidates may be assigned a Centre other than the one chosen by him/her).

3. What will you study ?

The programme offers courses in General Principles of Writing and a Guided Writing Project, which are compulsory, and Elective courses, namely : Feature Writing, Short Story Writing, Writing for Radio and Television and Writing Poetry. Only three electives are required to be offered besides the compulsory courses.

4. How will you study ?

The University offers opportunities for higher education through the use of distance teaching methods according to which the students will be supplied carefully designed self-instructional printed study materials, assignments for home work, facility for the use of audio-video cassettes and counselling/tutoring at the Study Centres spread all over the country. Counsellors/Tutors shall be available at Study Centres to which the students will be attached after admission is finally confirmed. Such centres are provided in different regions of the country.

5. How long would you study the course ?

A minimum study period of one academic year is required to be devoted. However, the students have the freedom to complete the programme successfully in a maximum period of 4 years. Thus people engaged in their profession or domestic chores can pace their studies depending on time and other facilities available with them.

6. Fees

Apart from Entrance Test Fee of Rs. 25/- payable alongwith the application, a course fee of Rs. 750/- will be payable in two instalments. The first instalment of Rs. 450/- at the time of admission and second instalment by 1.5.89. Examination Fee @ Rs. 20/- per course will be payable as and when examinations are taken.

7. Where will you get counselling facilities ?

Counsellors/Tutors shall be available at one of the following cities to be allocated after admission.

Hyderabad, Vijayawada, Guwahati, Patna, Chandigarh, Delhi. Shimla, Jammu-Tawi, Bangalore, Trivandrum, Bhopal, Bombay, Imphal, Shillong, Bhubaneshwar, Cuttack, Jaipur, Madras, Coimbatore, Lucknow, Allahabad, Dehradun, Calcutta, Pune.

8. How shall you be evaluated ?

(i) The first term-end examination will be held at the end of the prescribed duration of the Programme. The students can pace their studies by appearing at the subsequent term-end examinations organized every six months in one or more courses not completed in the first attempt.

(ii) The progress of the student will be assessed on a continual basis through assignments which the students will be required to submit on a regular basis as per schedule announced. The performance in continuous evaluation (assignments) will be counted towards the final result as per the rules of the University.

9. Other pertinent points

This is not a prospectus, but only a brief description of the scheme as such should not be deemed as rules or regulations. Though the scheme is open in nature and the University may make its programme accessible to those who are otherwise eligible for it, it however reserves its right to de-limit admissions depending upon the facilities and resources available with it. As such, qualifying in the Entrance Test does not guarantee admission to the programme or to use of any facility offered by the University or creation of new facilities in any way.

10. How to apply ?

The candidates are advised to ensure accuracy and authenticity of the information supplied by them in the application form. In the event of any information having any bearing on the eligibility of the case found incorrect at a subsequent stage the admission shall be liable to cancellation any time. The applications complete in all respects in the accompanying format alongwith entrance test fee of Rs. 25/- should reach the University on or before Monday the July, 25, 1988.

The Application Form should be addressed to :
The Director
Admissions & Evaluation
Indira Gandhi National Open University
A-39, KAILASH COLONY
New Delhi-110 048.

The envelope containing the application should be superscribed with the legend in CAPITAL LETTERS

"APPLICATION-CRWE-ENT-TEST"

In case, the candidates need acknowledgement, they should enclose a self-addressed postcard. The selected candidates who do not receive the Hall Ticket by 5th September 1988 should either personally contact at the above address or inform telegraphically.

APPLICATION FORM

Entrance Test, September 18, 1988
Diploma in Creative Writing in English

LAST DATE : Monday, July 25, 1988

This part of the advertisement may please be cut out and duly filled-in. For more copies for use of your friends and acquaintances/others, the form may be xeroxed or typed out or its columns be neatly re-drawn by hand if adequate facilities are not available.

General Instructions :

1. While typing or redrawing by hand, draw only the columns. These should be in the same order as given in this proforma and should have sufficient space to write the needed information.
2. The entries be filled in English only and in CAPITAL LETTERS so that entries can be correctly recorded by the Computer.

1. Name : CAPITAL LETTERS ONLY

Write only one letter in each box. Leave one box blank between one part of your name and the other. Please condense your name if the space is not sufficient.

2. Father's Name :

(As in 1 above)

3. Postal Address (Complete)

(a)

(b)

(c)

d) Village/Town

(e) Distt. & State

(f) Pin Code

4. Sex : Please write Code No. in the given Box
1-Male, 2-Female

5. Nationality : ______________

6. Date of Birth :
Date Month Year

In Words ______________

Should have completed 25 years of age on or before 1.1.89.

Please attach in testimony thereof an attested copy of the School Transfer Certificate (T.C.) Matriculation/SSLC Certificate, or the Certificate issued by your employer if in Govt. Service, or Autonomous Body/Public Undertaking or Limited Concern or attach original affidavit to this effect countersigned by an authority not less than the Sub-Divisional Magistrate.

7. Educational Status ☐

Write the Code of the highest qualification obtained:

less than Matriculation —1 Matriculation —2
Senior Secondary/Intermediate —3 Graduation —4
Masters Degree —5 M.Phil —6
Ph.D. —7

8. Area Classification ☐

Please Write the Code No. of the area you live in.
Rural Area=1
Urban Area=2
Tribal Area=3

9. Whether SC or ST candidate ? (Write 1 for Scheduled Caste or 2 for Scheduled Tribe, if applicable) ☐

10. Choice of Examination Centre : (List Supplied) (Full in Code No.)

(The University reserves its right to allocate any other Centre, if deemed necessary)

First Choice ☐☐☐☐
Second Choice ☐☐☐☐

11. Entrance Test Fee.
Remit Rs. 25/- through a Bank Demand Draft payable to :

'Indira Gandhi National Open University, New Delhi'.

Bank **STATE BANK OF INDIA ONLY**

Branch & Town ________________

Bank Draft No. ________________

(Letter Code) (Number)

CAPITAL LETTERS ONLY

Date of Issue________________

I hereby declare that the particulars supplied by me are correct to the best of my knowledge and will be supported by documents when asked for. I am also fully aware of the fact that in the event of any information being found incorrect or misleading my candidature shall be liable to cancellation by the University any time.

Date : **Full Signature of the Candidate**

Doctor Harisingh Gour Vishwavidyalaya, Sagar

ADMISSION TO THE MASTER OF BUSINESS ADMINISTRATION (M.B.A.) PROGRAMME–1988

Application on prescribed form are invited for admission (through admission test) to the two-year M.B.A. (Master of Business Administration) Course. Graduates of any Faculty of a statutory University obtaining not less than 50% marks (45% in the case of SC. & ST. candidates) in the aggregate in graduate or post-graduate examination are eligible to apply. Those who have appeared at qualifying examination may also apply.

Application forms and admission rules may be obtained on cash payment of Rs. 15/- from the State Bank of India, University Branch, Sagar 470003 or by post from the Professor & Head, Department of Applied Economics and Business Management, Doctor Harisingh Gour Vishwavidyalaya, Sagar 470003 (M,P.) by sending to him a Bank-Draft/Indian Postal Order for Rs. 20/- payable to the Registrar, Doctor Harisingh Gour Vishwavidyalaya, Sagar M.P. A self-addressed envelope (28 cm. x 10 cm.) should be sent alongwith the request for application form.

Completed application forms alongwith the requisite fee must reach the office of the Head, Department of Applied Economics and Business Management not later than 4.00 P.M. on Saturday, the 30th July, 1988.

R.N. Dhawan
REGISTRAR

इन्दिरा गाँधी राष्ट्रीय मुक्त विश्वविद्यालय

INDIRA GANDHI NATIONAL OPEN UNIVERSITY

ADMISSION TO DIPLOMA IN MANAGEMENT, MODULE-1 (Beginning January 1989)

Entrance Test, September 18, 1988

Indira Gandhi National Open University, an autonomous Institution set up under an Act of Parliament, invites applications from the eligible candidates for Entrance Test to be held on Sunday the 18th Sept. '88 for admission to its 'Diploma in Management, Module-I Programme'. The basic task of the Indira Gandhi National Open University is to advance and disseminate learning and knowledge by a diversity of means including the use of communication technology. In the process it has to increasingly aim at democratisation of higher education and maintenance of high qualily, covering larger segments of population, vacations and professions. Alongwith this, it has to encourage and strengthen the open and distance education system in the country.

1. Who should apply ?

Module-I of Diploma in Management is open to working persons with 3 or more years of managerial or supervisory experience holding Bachelor's Degree in any discipline. The persons not having Bachelor's Degree should have acquired 6 or more years of similar experience. The candidates under both the above categories should have attained the age of 25 years on or before January 1, 1989. There is no limit for maximum age.

2. What will you Study ?

The University follows a modular approach to the programme. If a student undergoes various modules in a sequence, they would ultimately lead to Master's Degree in Management. The Master's Degree Programme would consist of four modules. Foundation courses (Module-I). Application courses (Module-II), Specialisation courses (Module-III) and Integration courses (Module-IV).

3. How long would you study under the Programme ?

A minimum study period of one academic session, beginning January 1989 is required to be completed for Module-I. However, the students have the freedom to complete this programme successfully in a maximum period of 4 years. Thus people engaged in their professional or domestic chores have liberty to pace their studies depending on the time and other facilities available with them.

4. Fees

Apart from Entrance Test Fee of Rs 25/- payable alongwith the application, a course fee of Rs 750/- will be payable in two instalments. The first instalment of Rs. 450/- at the time of admission and second instalment by 1.5.89. Examination Fee @ Rs. 20/- per course will be payable as and when examinations are taken.

5. How will you study ?

The University offers opportunities for higher education through the use of distance teaching methods according to which the students will be supplied with carefully designed self-instructional

LIST OF EXAMINATION CENTRES

Code No.	Name of the City
0101	Hyderabad/ Kandaswamy Lane
0107	Hyderabad-Uppal
0102	Tirupati
0103	Vijayawada
0104	Guntur
0105	Warangal
0106	Anantpur
0201	Port Blair
0301	Itanagar
0401	Guwahati
0501	Patna
0502	Jamshedpur
0503	Dhanbad
0504	Muzaffarpur
0505	Bhagalpur
0506	Ranchi
0601	Chandigarh
	Delhi-DLH
0701	DLH Raja Garden
0703	DLH Dhaula Kuan Venkateswara College
0704	DLH DU area
0707	DLH Jamia Nagar
0708	DLH Ajmeri Gate
0709	DLH Dhaula Kuan RL College
0710	DLH Kalkaji
0711	DLH Hindu College
0712	DLH Vivek Vihar
0801	Marmagao
0901	Ahmedabad
0902	Vadodara
0903	Rajkot
1001	Kurukshetra
1003	Panipat
1005	Rohtak
1006	Faridabad
1101	Shimla
1102	Mandi
1103	Solan
1201	Jammu-Tawi
1202	Srinagar
1301	Bangalore
1302	Mangalore
1303	Dharwad
1401	Trivandru
1402	Cochin
1501	Bhopal
1502	Jabalpur
1503	Durg
1504	Gwalior
1505	Bilaspur
1506	Indore
1508	Rewa
1601	Bombay Vidyanagar Kalina
1604	Bombay-Muland
1602	Pune
1605	Satara
1606	Kolhapur
1607	Nagpur
1701	Imphal
1801	Shillong
1901	Aizwal
2001	Kohima
2101	Bhubaneshwar
2102	Cuttack
2103	Rourkela
2104	Berhampur
2105	Angul
2106	Balasore
2107	Bolangir
2108	Sambalpur
2201	Jallandhar
2202	Amritsar
2301	Jaipur
2302	Udaipur
2303	Kota
2304	Jodhpur
2305	Bikaner
2306	Ajmer
2401	Pondicherry
2501	Madras-Tharamani
2505	Madras-IIT Campus
2502	Coimbatore
2503	Madurai
2504	Tiruchirapalli
2601	Gangtok
2701	Lucknow
2702	Agra
2703	Allahabad
2704	Bareilly
2705	Dehradun
2706	Kanpur
2707	Modinagar
2708	Varanasi
2709	Gorakhpur
2710	Sultanpur
2711	Haldwani
2712	Jhansi
2713	Aligarh
	Calcutta-CAL
2801	CAL Piajananda Pothigraha
2803	CAL Kancharapara
2804	CAL Ashwani Dutta Memorial Centre
2901	Agartala

printed study materials, assignments for home work, facility for the use of audio-video cassettes and counselling/tutoring at the Study Centres spread all over the country. Counsellors/Tutors will be available at one of the study centres assigned to the student after admission is finally confirmed. Such centres are provided in different regions of the country.

6. Where will you get Counselling facilities ?

At one of the towns chosen by you. Hyderabad, Tirupati, Vijayawada, Guwahati, Patna, Jamshedpur, Chandigarh, Delhi, Marmagao, Ahmedabad, Vadodara, Rajkot, Kurukshetra, Sonepat, Shimla, Jammu-Tawi, Bangalore, Mangalore, Trivandrum, Bhopal, Jabalpur, Durg, Gwalior, Indore, Bombay, Pune, Shillong, Bhubaneshwar, Cuttack, Rourkela, Jallandhar, Jaipur, Kota, Jodhpur, Madras, Coimbatore, Madurai, Tiruchirapalli, Lucknow, Agra, Allahabad, Bareilly, Dehradun, Kanpur, Modi Nagar, Calcutta, Imphal.

7. How will you be evaluated ?

(i) The first term-end examination will be held at the end of the prescribed duration of the programme. The students can pace the studies by appearing at the subsequent term-end examinations organized every six months in one or more courses not completed in the first attempt.

(ii) The progress of the student will be assessed on continual basis through assignments which the students will be required to submit on a regular basis as per schedule announced. The performance in continuous evaluation (assignments) will be counted towards final result as per the rules of the University.

8. What is the Entrance Test ?

An Entrance Test will be held on September 18, 1988 which will contain multiple choice items. The duration of the Test will be 2 hours. Those who qualify in the Entrance Test will be offered admission by the University in accordance with the criterion laid down by it. The test will be available only in English medium.

A list of examination centres is given below. You are required to give First Choice and Second Choice in the relevant columns given in the application format. The Examination Centre once chosen shall not be changed.

9. Other Pertinent Points

This is not a prospectus but only a brief description of the scheme. As such it should not be deemed as rules and regulations. Though the University is open in nature and the University would make its programme accessible to all those who are otherwise eligible for it, it however, reserves its right to delimit admissions depending on facilities and resources available with it. As such fulfilment of eligibility conditions or qualifying in the test does not guarantee admission to the programme or to the use of any facility offered by the University or creation of new facilities in any way.

10. How to apply ?

The candidates are advised to ensure accuracy and authenticity of the information supplied by them in the application form. In the event of any information found incorrect at a subsequent stage having any bearing on the eligibility of the case, the admission shall be liable to cancellation any time. The applications complete in all respects in the form indicated should reach the University on or before Monday the 25th July, 1988 alongwith Examination Fee of Rs. 25/-. The application form should be addressed to:

The Director (Admissions & Evaluation)
Indira Gandhi National Open University
A-39, Kailash Colony, New Delhi-110 048.

The envelope containing application should be superscribed with the legend in CAPITAL LETTERS.

"APPLICATION-DIM-ENT. TEST"

In case the candidates need acknowledgement they should enclose a self-addressed postcard. The eligible candidates who do not receive the Hall Ticket by 5th September, 1988 should either personally contact at the above address or inform telegraphically.

APPLICATION FORMAT
DIPLOMA IN MANAGEMENT (MODULE I) 1989

Application for Entrance Test
(September 18, 1988)

LAST DATE : MONDAY JULY 25, 1988

This portion of the advertisement itself may be used for application or alternatively it may be typed on a foolscap paper, with columns neatly drawn.

1. Incomplete applications will not be taken note of.
2. Use BLOCK CAPITAL LETTERS and write legibly.
3. Please send the applications alongwith the required fee and a self-stamped postcard so as to reach on or before the last date

1. Name

Write only one letter in each box. Leave one box blank between one part of your name and the other. Condense your name if space is not sufficient.

2. Sex Please write the Code No. in the given box, 1 Male 2 Female

3. Date of Birth (Should have attained the age of 25 yrs on or before 1st Jan. 1989) Day Month Year

4. Father's/Husband's Nam

(As per instructions in Column 1)

5. Do you belong to Scheduled Caste/Tribe?
(Write 1 if you belong to SC and 2 for ST)

6. Nationality (write 1 if an Indian National or 2 if an alien)

7. Area Classification (Please write the relevant code of area you live in)
Tribal Area 1. Rural Area 2. Urban Area 3.

8. Choice of the Examination Centre: First choice
(Please fill in the Code No. from the list supplied) Second Choice
The University reserves the right to allocate any other centre if deemed necessary.

9. Mailing Address

City/Village
Distt & State
Pin Code

10. Entrance Test Fee
A fee of Rs. 25/- is remitted through Demand Draft payable to Indira Gandhi National Open University, New Delhi.

BLOCK LETTERS ONLY

Issuing Bank STATE BANK OF INDIA only.

Branch & Town

Branch Code

Draft No.

Date of Issue

11. Declaration of the applicant
I hereby declare that (Tick the relevant one and cross out the other)
(a) I am a graduate with more than three years of managerial/supervisory experience
OR
(b) I am a non-graduate with more than six years of managerial/supervisory experience.

I further declare that the particulars supplied by me are correct to the best of my knowledge and it will be supported by original documents when asked for. I am also fully aware of the fact that in the event of any information being found incorrect or misleading my candidature shall be liable to cancellation by the University any time.

Signature & Stamp of the Employer Testifying
Veracity of Information Supplied

Full Signature of the Candidate

Annamalai University

DIRECTORATE OF DISTANCE EDUCATION

ADMISSION NOTIFICATION FOR THE YEAR 1988-89

The Directorate offers the following courses of study. Admission is open to persons all over India.

I. Professional Courses

1. B.Ed. (English and Tamil Media)
Duration: One year

Eligibility: (i) Any graduate employed teacher working in schools recognised by the Department of School Education and
(ii) Any Post-graduate

2. M.Ed. (English and Tamil Media)
Duration: One year

Eligibility: B.Ed./M.H.Ed. or an equivalent degree.

II. Undergraduate Courses

Duration: Three years

3. B.A. History (English &Tamil Media)
4. B.A. Sociology (English & Tamil Media)
5. B.A. Psychology (English Medium)
6. B.A. Economics (English Medium)
7. B.A. English
8. B.Lit. (Tamil)
9. B.Com. (English & Tamil Media)

Eligibility: A pass in Pre-University/Higher Secondary Examination/Second Year Foundation Course or an equivalent examination.

10. B.Sc. Mathematics (English Medium)

Eligibility: A pass in Pre-University/Higher Secondary Examination/Second Year Foundation Course or an equivalent examination with Mathematics as one of the subjects.

III. Postgraduate Courses

Duration: Two years

11. M.A. Tamil

Eligibility: B.A./B.Sc. with Tamil under Part I or III or B.Lit.

12. M.A. English.

Eligibility: B.A./B.Sc. with English under Part II or III.

13. M.A. History (English & Tamil Media)

Eligibility: BA. /B.Sc.

14. M.A. Economics (English Medium)

Eligibiligy: B.A. Economics or B.Sc. Statistics/ B.Sc. Mathematics with 50% of marks in Part III of the B.Sc. Degree.

15. M.A. Psychology (English Medium)

Eligibility: B.A. or B.Sc with 40% of maks in Part III.

16. M.A. Sociology (English Medium)

Eligibility: B.A./B.Sc.

17. M.Sc Mathematics (English Medium)

Eligibility: B.Sc. Mathematics / B.Sc. Statistics.

18. M.Sc. Physics (English Medium)

Eligibility: B.Sc. Physics

19. M.Sc. Chemistry (English Medium)

Eligibility: B.Sc. Chemistry.

20. M.Sc. Zoology (English Medium)

Eligibility: B.Sc. Zoology.

21. M.Sc. Botany (English Medium)**

Eligibility: B.Sc. Botany

22. M.Com. (English & Tamil Media)

Eligibility: B.Com./B.B.A./B.A. Corporate Secretaryship/B.A. Co-operation.

IV. (a) Law Degree Courses

23. B.A.L. (Bachelor of Academic Laws) (English Medium)
Duration: Three years

Eligibility: Any Degree.

24. B.G.L. (English Medium)**
Duration: Two years.

Eligibility: Any Degree.

(b) Diplomas in Law : (English Medium)
Duration: One year.

25. (a) Diploma in Company Law with Banking Law and Practice
(b) Diploma in Labour Laws with Administrative Law
(c) Diploma in Law of Taxation
(d) Diploma in Management Laws
(e) Diploma in Criminology and Administration of Criminal Justice
(f) Diploma in Insurance Laws

Eligibility: Any Degree.

V. Management Courses

26. Diploma Courses in Management (English Medium)
Duration: One year

(a) Diploma in Production Management

Eligibility: A degree in B.E./M.Com./M.B.A./M.A Economics/M.Sc. Mathematics/M.Sc. Statistics/Diploma Holders in Engineering.

(b) Post-Graduate Diploma in Material
Management
(c) Post-Graduate Diploma in Busines
Administration
(d) Post-Graduate Diploma in Personne
Management
(e) Post-Graduate Diploma in Marketin
Management

(f) Post-Graduate Diploma in Financial Management

Eligibility: Any Degree.

VI. Foundation Courses : (English & Tamil Media)

27. **First Year :** Eligibility: Pass in 10 year SSLC (New Pattern) or an equivalent examination/failed in 11 year SSLC.

28. **Second Year :** Eligibility: Pass in 11 year SSLC or an equivalent examination.

VII. Job Oriented Courses

Duration: One year

29. (a) Diploma in Concrete Technology and Design of Concrete Structures (English Medium)

Eligibility: Diploma in Civil Engineering/B.E. Civil Engineering/B.E. Civil & Structural Engineering.

(b) Diploma in Chemical Process, Instrumentation & Control (English Medium)

Eligibility: B.Sc. Graduates with Physics/Chemistry/Mathematics main and ancillary subjects or Diploma holders in Chemical, Mechanical, Electrical or Electronics Engineering.

(c) Diploma in Maintenance Management (English Medium)

Eligibility: (i) B.E. (Mechanical), B.E. (Production), B.E. (Electrical), B.E. (Chemical).

(ii) A.M.I.E. (Mechanical/Electrical/Chemical)

(d) Certificate Course in Automobile Technology (English & Tamil Media)

Eligibility: A pass in SSLC (X Standard) or equivalent examinations

**To be introduced this year.

Caution

Same Private Institutes/Individuals posing as our agents are allegedly collecting fees, issuing Application Forms and promising admission to our courses. The Directorate has no such agents and takes no responsibility for their actions. Candidates are therefore advised to correspond directly with the **Diractorate only**.

The candidates are advised to apply direct to the Directorate individually for Application Form as well as for admission. Applications for admission received through tutorials or any other agency will be summarily rejected.

The cost of application form and prospectus for each course is Rs. 25/-. Applications will be sent to all by registered post.

Application form and Prospectus can be had from the Director, Directorate of Distance Education, Annamalai University, Annamalainagar-608002 by sending a requisition along with a crossed Demand Draft for Rs. 25/-drawn in favour of the **Registrar, Annamalai University,** on any bank at Annamalainagar/Chidambaram, mentioning clearly the name of the course for which the application form is required and a self-addressed unstamped cover of size 25 cm × 15 cm. Cheques, Postal Orders, Money Orders and Outstation Demand Drafts are not accepted. Demand Draft should be purchased on or after 1.6.1988.

The last date for receipt of filled-in application is **31st August, 1988**.

Study Centres have been opened at the following places for the benefit of the students.

1. 19, Marshals Road, Egmore, Madras-600008
2. 7, Gnanam Colony, 1 Main Road, Ramalinga Nagar, Woriyur, Tiruchi-620003
3. 15, Dr. Subbarayan Street, Salem-636001
4. 70, Ammasi Madam Street (Near T.T.C. Bus Stand), Meenakshipuram, Nagercoil-629001
5. 4, Thiagarajapuram, Vellore-632001
6. 276, Annanagar (Near Gupta's Auditorium) Madurai-625020
7. 47, Basant Enclave, New Delhi-110057 (Phone No. 607407)
8. DDE Building, Annamalai University, Annamalainagar. (Phone No. 2610-Chidambaram)

Liaison Officers at the different Study Centres may be contacted for any further clarification regarding admissions. Applications can be had from the Study Centres also on payment of Rs. 25/- by Demand Draft drawn in favour of **'The Registrar, Annamalai University'** as instructed above. Study Centres will remain closed on all Tuesdays, Second Mondays and all other public holidays.

Those who want to get application by post should apply to the Directorate only and not to the Study Centres.

Filled in applications should however be sent only to the Director, Directorate of Distance Education, Annamalai University, Annamalainagar, South Arcot District, Tamil Nadu, Pin code : 608 002. **In no case filled in applications should be sent to the Study Centres.**

Application and Prospectus can be had from the Directorate of Distance Education, Annamalai University, Annamalainagar and Study Centre from 1.6 1988.

Admission cannot be claimed as a matter of right and the Directorate reserves to itself the right of admission.

No. A1/1/88

PLACE : Annamalainagar
DATE : 16th May, 1988.

K. Ansari Baig
DIRECTOR

CLASSIFIED ADVERTISEMENTS

HARYANA INSTITUTE OF PUBLIC ADMINISTRATION
CHANDIGARH

(Society registered under Societies Registration Act XXI of 1860)

Advertisement No. 2/33-83-A(5)

The Haryana Institute of Public Administration, which is engaged in imparting training to IAS/HCS Probationers and other officers of State Services invites applications for the following post :—

1. Professor in Public Administration

Pay Scale : Rs. 4500-150-5700-200-7300 (UGC Grade)

Age Limit : Not exceeding **50 years on 31st July; 1988.**

Essential Qualifications for the post are as under :

(i) Master's degree in the relevant field of study with consistently good academic record—First or high second class or B Plus in the grading system.

(ii) A Doctor's degree or published paper of high standard.

(iii) At least 10 years' experience in teaching Post-graduate classes and successfully guiding/conducting research in the relevant fields; or

At least 10 years experience as practising administrator in a senior Administrative position in the area of Public Administration.

Applications are also invited for the post of Reader in the above mentioned faculty. These will be considered only if suitable candidate is not available for the post of Professor. A candidate for the post of Professor can also be considered for the post of Reader if he clearly opts for the same in his application The pay scale, age limit and experience, etc. for the post of Reader will be as under :—

Pay Scale : Rs. 3700-125-4700-150-5700 (UGC Grade).

Age Limit : Not exceeding 45 years as on 31st July, 1988.

Experience : At least 5 years' experience in teaching Post-graduate classes and successfully guiding/conducting research in the relevant fields; or at least 5 years' experience as practising administrator in a Senior administrative position in the areas of Public Administration.

Other essential qualifications for the post of Reader in above faculty will be the same as prescribed for the post of professor.

2. Prescribed qualifications and age limit relaxable in the case of exceptionally qualified/experienced Candidates. Appointment may also be made on deputation.

3. Appointment shall be made on probation for a period of one year which can be extended by another year.

4. Appointment may also be made on contract basis for a limited period.

5. The Institute reserves to itself the right to fill or not to fill the post advertised.

6. Candidates called for interview from outside Chandigarh will be paid first class rail fare to and fro by the shortest route on production of either money receipt or ticket number or actual bus fare whichever is less.

7. Application, giving full particalars of qualifications (mentioning Division/grade, percentage of marks obtained, year, Board/University from High School Examination onwards with copies of testimonials), Date of Birth, Experience, present pay and pay scale, details of previous employment, if any, publications (mentioning the name of publisher(s) and year of publication, names of the journals and references regarding the issues in which published in respect of papers published), with copies of transcripts of two best articles published and transcript of one or two chapters from the main publication work, should reach the Director, Haryana Institute of Public Administration, S.C.O. No: 2913-14, Sector 22-C, Chandigarh, on or before **29th July, 1988**. Incomplete applications and those received after the due date will not be considered.

The Candidates who have already appeared for interview in March, 1988 in response to earlier advertisements need not apply again.

NOTE : (i) The Institute is likely to shift to its permanent campus at Gurgaon in the near future.

(ii) Housing facility will be made available by providing rented accommodation upto Rs. 1500/- P.M.

Asha Sharma
DIRECTOR

JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI

Advt. No. A&E-II/4/88

The University has openings for faculty positions in the undermentioned areas of study as indicated against each;

I **Professor** (Grade Rs. 4500-7300) one each in

(1) South East Asian Studies and
(2) Science Policy

Essential Qualifications : (a) eminent scholar with published work of high quality, actively engaged in research in the area of South East Asian Studies and Science Policy respectively. Ten years' experience in teaching and or research including guidance at doctoral level or (b) an outstanding scholar with established reputation who has made significant contribution to knowledge in the specified areas.

Desirable Qualifications : For South East Asian Studies : Knowledge of South West Pacific Studies.

For Science Policy : Doctoral degree in Social Sciences/Natural Sciences/

gineering or Technology. High degree expertise in Science Policy Studies ch as Science Policy Planning and iorities; Technology Assessment; quisition; Adaptation Transfer and e in Research Management, Inter- tional Relations; Science and Society c.

Note: Those who have already plied in response to the earlier vertisement for Professorship in ience Policy need not apply again but dicate their willingness for being nsidered and also add additional formation if any, to update their bio- ata.

I Associate Professor
(Grade Rs. 3700-5700)

(3) French—One

Essential Qualifications: Good acade- ic record with doctoral degree or quivalent published work. Actively ngaged in research or innovation in eaching methods or production of eaching materials. About five years' xperience with minimum three years as ecturer or equivalent position.

Desirable Qualifications / Specialisa- ion : (a) Translation-Interpretation / Contemporary French Literature. (b) h.D. in literature, (c) Ability to teach contemporary French literature at post- raduate level and at M.Phil level.

II Assistant Professor
(Grade Rs. 2200-4000)

(4) Soviet Studies (Sociology) —One
(5) Soviet Studies (Economics)—One
(6) Chinese Language —One

Essential Qualifications : Master's degree in the relevant subject with at least 55% marks or its equivalent grade, and good academic record.

Desirable Qualifications : For Soviet Studies—Relevant published work of academic interest, specialisation in Social and Cultural Development in Soviet Central Asia for the Post in Sociology and Economic Development in Soviet Central Asia for the Post in Economics and working knowledge of Russian Language.

For Chinese : (a) High proficiency in speaking and reading modern Chinese language; (b) Teaching experience in any Indian University; (c) Advance training in Chinese language.

Application forms alongwith necessary details may be obtained free of cost in person or by sending a self-addressed envelope (23 cm × 10 cm) duly stamped to the Deputy Registrar (Aca. & Estt.), Room No. 204 - B, Administrative Block, Jawaharlal Nehru University, New Delhi - 110067. The applications in prescribed form, complete in all respect, duly forwarded by the competent authority (for those in service) should reach this University by **12th July, 1988.**

JAMIA MILLIA ISLAMIA
JAMIA NAGAR
NEW DELHI - 110025

Advt. No. 3/1988-89

Dated : 20.06.1988

Applications on the prescribed form which can be had from the Registrar's Office on any working day between 10 : 00 a.m. and 12 : 00 Noon or by sending a self-addressed and stamped (Re. 1/-) envelope of 10 x 23 cms. are invited alongwith crossed Indian Postal Order or Bank Draft of Rs. 7/- (Rs. 2/- for SC/ST candidates) for the following posts so as to reach the Registrar by 01 : 00 p.m. on **28.7.1988.**

Ability to teach in Hindustani, particularly Urdu is a desirable qualification for teaching posts and adequate knowledge of Urdu and Hindi is essential for non-teaching posts.

D.A., C.A., H.R.A., P. F., Gratuity, Pension and other benefits will be given as per Jamia rules.

Relaxation in any of the qualifications may be made on the recommendation of the Selection Committee in exceptional cases.

1. **One Professor in Chemistry (Rs. 4500-7300)**

An eminent scholar with published work of high quality actively engaged in research. About ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Desirable

Specialization in Chemistry of Materials/Solid State/Photochemistry/ Polymer/Spectroscopy/Theoretical and Physical/Quantum Mechanics or any other allied branch of Chemistry

2. **One Controller of Examinations (Rs. 4500-7300) Permanent**

Essential

I. A good Master's Degree of a recognised University, and

(a) At least 15 years experience of teaching at university level with experience of educational administration, or

(b) Comparable qualifications in research establishments and other institutions of higher education, or

(c) 10 years of administrative experience.

II. Knowledge of Urdu.

Desirable

Experience of educational administration or organising examinations.

3. **Fifteen Lecturers (Rs. 2200-4000), two each in Physics, Chemistry; one each in Bio-Sciences, Mathematics, Geography, History, English, Persian, Social Work, Psychology, Political Science, Russian and French**

(a) A Doctorate's degree or research work of an equally high standard; and

(b) Good academic record with at least second class (C in the seven point scale) Master's degree in the relevant subject from an Indian University or an equivalent degree from a foreign University.

Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his theses or from his published work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a good academic record, (weightage being given to M. Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's Degree or give evidence of research of high standard within eight years of his appointment failing which he will not be able to earn future increment until he fulfils these requirements.

Desirable/Specialization

(1) For Lecturers in Physics—(i) Experimental Electronics/ Electronic Instrumentation (ii) Experimental Solid State Physics/ Experimental Super conductivity/ Opto-electronic materials/Solar Energy materials.

(2) For Lecturer in Bio-Sciences—Micro-biology.

(3) For Lecturer in History—Ancient Indian History.

4. Three Lecturers in Engineering (Rs. 2200-4000): two in Mechanical Engineering and one in Electrical Engineering

First class graduate in appropriate branch of Engineering with 2 years teaching experience at degree level or fresh M.Tech. Higher starting salary possible for longer experience. Published work desirable.

Desirable Specialization

(1) For the posts of Mechanical Engineering :
  (i) Machine Design including CAD; (ii) Production Engineering including CAM.

(2) For the post of Electrical Engineering :
Electrical Power systems.

5. One Lecturer in Education (Paper Craft & Maintenance & Repair of Domestic Gadgets), Rs. 2200-4000.

(a) A Doctor's Degree in Education or research work of an equally high standard; and

(b) Good academic record with at least second class (C in the seven point scale) Master's degree in relevant subject from an Indian University or an equivalent degree from a foreign University.

OR

(c) A Doctor's Degree in any University discipline or research work of an equally high standard; and

(b) Good Academic record with an M. Phil. Degree in Education (which may be acquired while in service) from an Indian University or an equivalent degree from a foreign University.

Having regard to the need for developing inter-disciplinary programmes, one of the degrees (a) and (b) above may be in relevant subjects, the other being in Education.

Provided that if the Selection Committee is of the view that the Research work of a candidate as evident either from his theses or from his published work is of very high standard it may relax any of qualifications prescribed in

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable a person possessing a good academic record weightage being given to M.Phil. or equivalent degree or research work of quality may be appointed provided he has done research work for at least two years or has practical experience in research laboratory / organisation on the condition that he will have to obtain a Doctor's Degree or given evidence of research work of equivalent high standard within eight years of his appointment failing which he will not be able to earn future increments until he fulfils these requirements.

6. One Asstt. Archivist (Rs. 700-1300 unrevised but likely to be revised)

Essential

(a) Master's Degree in Modern/ Medieval Indian History, at least in Second Class or an equivalent qualification.

(b) Post-graduate diploma in Archival Science from the National Archives of India or an equivalent qualification.

(c) Knowledge of Arabic/Persian.

7. One P.G.T. in Islamic Studies (Rs. 1640-2900)

Essential

(i) Master's degree of a recognised University in the subject concerned.

(ii) University Degree or Diploma in teaching.

or

3 years teaching experience in a college,

or

7 years teaching experience in a High or Hr. Secondary School.

8. One Research Assistant (Sociology), (Rs. 1400-2300).

(1) A Second Class Master's degree or equivalent in Sociology from a recognised University. (2) Experience in and demonstrated ability for conducting social research, including quantitative techniques. (3) Adequate knowledge of Urdu and Hindi.

NOTE : (1) The number of vacancies given in the advertisement above are liable to be changed without notice by the Jamia.

Khwaja M. Shahid
REGISTRAR

ANDHRA PRADESH AGRICULTURAL UNIVERSITY

ADMINISTRATIVE OFFICE
'RAJENDRANAGAR'
HYDERABAD-500030.

Advertisement No. 3/R.C./88

Dated : 24-6-1988.

1. Applications in the prescribe form together with a Registration fee o Rs. 10/- are invited for the undermentioned PROFESSORS posts in Andhr Pradesh Agricultural University, Administrative Office, Rajendranagar Hyderabad on or before **30-7-1988.**

S. No.	Name of the Department	No. of Posts
	Faculty of Agriculture	
1.	Agronomy	1 (one)
2.	Horticulture	2 (two)
3.	Agricultural Economics	1 (one)
4.	Plant Pathology	1 (one)
5.	Agricultural Engineering	1 (one)
	Faculty of Veterinary Science	
1.	Professor in Animal Nutrition	1 (one) purely temporary
2.	Professor of Poultry Science	1 (one)
	Faculty of Home Science	
1.	Human Development & Family Studies. (C.D.)	1 (one)
2.	Family Resources Management (HM)	1 (one)
3.	Foods and Nutrition	1 (one)
		Purely temporary

Scale of Pay : Rs. 1500-60-1800-100-2,000-125/2-2500/-.

Full details regarding qualifications prescribed for the posts, and other particulars and the application form can be had from the University on payment of Rs. 10/- in person or through a crossed Demand Draft drawn from any branch of State Bank of India, State Bank of Hyderabad and Andhra Bank in favour of the Comptroller, A.P. Agril. University, Rajendranagar, Hyderabad drawn on State Bank of Hyderabad, Rajendranagar Branch. NO POSTAL ORDERS will be entertained. A self-addressed and stamped cover of Rs. 2-50 of the size of 35 cm × 15 cm may also be sent. The covers containing the requisitions for application form must be superscribed "Requisition for application form" and addressed to Registrar, Administrative Office Andhra Pradesh Agricultural University Rajendranagar. Hyderabad-500030.

The last date for receipt of applications is **30-7-1988**.

K.M. Azam

Group Discussion-cum-Orientation Programme

Participants at the Group Discussion-cum-Orientation Programme on Financial Administration in Universities organised by AIU at the University of Poona from 6-10 June, 1988.

MEERUT UNIVERSITY

MEERUT

Ref. No. DSW-12

Dated : 22.6.1988

ADMISSION NOTICE (1988-1989)

INSTITUTE OF ADVANCED STUDIES

Applications are invited for admission to:

M. Phil and **M.A./M.Sc.** Agricultural Botany, Botany, Economics, Education, English, History, Mathematics, Physics, Political Science, Psychology, Sociology, Zoology and (Horticulture, Statistics only M.Phil)

M.Ed.

Computer : Certificate Course (one Semester); Diploma Course (Two Semester)

Russian Language : Certificate, Diploma, Advanced Diploma Course (One year part time).

English Language : Proficiency in English Language (3 months Course).

The Institute has independent syllabi and examination pattern based on semester system.

Last date for the receipt of applications is **19 August, 1988.**

Prescribed admission Form and Brochure can be had from the Dean of Students' Welfare, Meerut University, Meerut-250005 by sending a Demand Draft only of Rs. 17.00 in favour of the **Finance Officer**, Meerut University, Meerut, or by Cash Payment of Rs. 10.00 (Rs. Ten) at the Cash Counter of the University.

The Admission Form duly filled in is to be sent to the **Head of the Department** of the Subject concerned, Institute of Advanced Studies, Meerut University, Meerut-250005.

V.B. Bansal
REGISTRAR

HIMACHAL PRADESH UNIVERSITY

RECRUITMENT BRANCH
SHIMLA-171005

Advertisement No : 2/88

Applications are invited (on prescribed form) for the following (Plan posts sanctioned by the UGC upto March 31, 1990 for the time being) posts for the Academic Staff College in the University, so as to reach the **Section Officer, Recruitment Branch, H.P. University, Shimla-171005,** alongwith a crossed Indian Postal Order of Rs. 20/- (Rs. 10/- for SC/ST payable to the Finance Officer, **by June 21, 1988:**

1. **Director-1** in the pay scale of Rs. 4500-7300.

2. **Reader-1** in the pay scale of Rs. 3700-5700.

Essential Qualifications

For Director : An eminent scholar with published work of high quality actively engaged in research. Ten years experience of teaching and/or research. Experience of guiding research at Doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Candidate with experience of organising orientation/professional/training methods will be preferred.

For Reader : Good academic record with a Doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position.

This condition may by relaxed in the case of candidates with outstanding research work.

Candidates with experience of organising orientation / professional/ training methods will be preferred.

Candidates already in service should send their applications through proper channel. An advance copy, however, may be sent direct.

Candidates called for interview will have to come to the place of the interview at their own expenses and bring with them their original research papers, degrees and certificates etc. for verification.

The University reserves the right to negotiate with suitable person or persons, if necessary, who may not have applied formally.

The University also reserves the right to fill up or not to fill up the post/ posts or to call only suitable candidates for interview.

Application form can be obtained from the **Section Officer, Recruitment Branch, H.P. University, Shimla-171005,** personally on payment of Rs. 5/- or by making a written request to him accompanied by self-addressed envelope of 23 x 10 cms. with postage stamps affixed worth Rs. 1.40 paise and a postal order of Rs. 5/- drawn in favour of the Finance Officer.

Note : (i) Applications received on plain paper, applications not in confirmity with the requirements as specified in the application form and applications received after the last date will not be entertained and no correspondence will be entertained in this regard.

(ii) A person applying for more than one post should send a separate application for each post.

A.R. Chauhan
REGISTRAR

UNIVERSITY OF NORTH BENGAL

CORRIGENDUM

In partial modification of Advertisement No. F. 22 / Advt. / Estt./24/R-88, dated. 10.6.88 on behalf of the University of North Bengal for the post of Professor, Reader and Lecturer in Computer Science the word "Physics" be included after the word 'in' arising in 2nd line of the essential qualification.

REGISTRAR

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University News

1-2
FD

MONDAY, JULY 18, 1988 Rs. 1.50

ALAGAPPA UNIVERS
ANNUAL CONVO
5.5.198
MMR.

r. P.C. Alexander, Governor of Tamil Nadu, addressing the First Convocation of the Alagappa University. Others seen fro L to R are Dr. (Mrs.) Radha Thiagarajan, Vice-Chancellor, Mr. A. Padmanabhan, Pro-Chancellor and Dr. Raja Ramanna, Chairman, Governing Council, Indian Institute of Science, Bangalore, who delivered the convocation address.

CLASSIFIED ADVERTISEMENTS

THAPAR INSTITUTE OF ENGINEERING & TECHNOLOGY

PATIALA

(DEEMED UNIVERSITY)

Advt. No. PAS/9/88

Applications on prescribed form (obtainable free from the Office of the Registrar by sending a self-addressed stamped envelope for Rs. 1.40 of 9'' x 4'' size) are invited for the permanent post of Registrar.

Pay Scale : Rs. 1500-60-1800-100-2000-125/2-2500 plus other allowances as admissible under the Institute Regulations.

Essential Qualifications

(i) A Bachelor's degree in Arts, Science, Commerce, Engineering or Technology of a recognised University with consistently good academic record.

(ii) A Post-graduate degree or Diploma in any of the above fields or in Public Administration/Management of a recognised Institute/University.

Experience

A minimum 15 years of experience in a Government, Educational or Research Institute or in a Commercial Organisation of national standing. Out of this, atleast 8 years should be in a Senior Administrative position. The candidate should have a good grasp in financial matters, secretarial experience of statutory bodies and committees, familiarity with academic activities and working procedures in higher educational Institutions.

Desirable

Degree in Law, Teaching, research or administrative experience in a residential educational Campus. Experience of Computer Applications to management information system.

Applications on prescribed form giving full particulars including names and addresses of three referees familiar with the professional work of the candidate and accompanied by a Crossed Indian Postal Order/Bank Draft for Rs. 10/- drawn in favour of Thapar Institute of Engineering & Technology, Patiala, payable at Patiala should reach the Deputy Director by **5th August, 1988.** Scheduled Caste Tribes candidates and candidates from abroad are exempted from payment of application fee.

DEPUTY DIRECTOR

TATA INSTITUTE OF SOCIAL SCIENCES

DEONAR, BOMBAY-400 088.

Dated : July 4, 1988

The Unit for Rural Studies, Tata Institute of Social Sciences, Bombay, requires a **senior co-ordinator (Reader)** for stationing in the district of Osmanabad near Tulzapur, in its rural Campus. The post is permanent and the incumbent is expected to initiate and co-ordinate training, research and action projects in the area of rural development. While the person is expected to be placed at Tulzapur, the job would require extensive travelling between the Bombay campus and the selected location near Tulzapur. The right candidate should have a good academic record with a Master's degree (with a minimum of 55% of the marks) in Social Work/Rural Development. If the candidate does not have a Ph.D., it will be necessary to complete it in 8 years. Experience in rural development projects (training/action/research) and liaison with Government Departments will be preferred. The candidate should be fluent in Hindi and English. Knowledge of Marathi would be an added advantage.

The Selected candidate would be placed in the scale of Rs. 3700-150-5300 plus the usual allowances permissible at Tulzapur, for the Maharashtra State Government employees. Total Emoluments at the minimum of the scale will be Rs. 4155.00 p.m. and at the maximum of the scale will be Rs. 5777.00 p.m.

The prescribed application form should be obtained from the above address either in person, or by post, by sending an application for the same, alongwith a stamped self-addressed envelope (Rs. 2/-) superscribed "Request for application for Senior Co-Ordinator". Last date for receipt of completed application form is **31.7.1988.**

N. Krishnamoorthy
REGISTRAR

PANJAB UNIVERSITY

CHANDIGARH

Advt. No. 7/88

Applications are invited for the following posts so as to reach the Registrar, Panjab University, Chandigarh, alongwith Postal Order of Rs. 10/- by **8-8-1988**. Fourteen days extra time is permissible to persons who have to submit their applications from abroad.

1. **Professors :** (Rs. 4500-150-5700-200-7300) (Revised)

Mathematics —3.
Statistics —2.

2. **Lecturers :** (Rs. 2200-75-2800-100-4000) (Revised).

Mathematics – 4.

3. **Research Associate :** Centre for Advanced Study in Mathematics—1.

Category A : Rs. 1400/- p.m. (fixed)	Likely to be revised as per U.G.C. norms.
Category B : Rs. 1600/- p.m (fixed)	
Category C : Rs. 1800/- p.m. (fixed)	
Category D : Rs. 2000/- p.m. (fixed).	

4. **Research Assistant :** (Rs. 550-20-650-25-750).

Statistics —1.

5. **Instructor** : (Rs. 550-20-650-25-750).

Statistics—1.

6. **Research Fellow :** (Rs. 950/- p.m. (fixed).

Statistics—1. (Likely to be revised as per U.G.C. norms).

Note :

1. The Vice-Chancellor could place before the Selection Committee names of suitable persons for its consideration alongwith the applications received in response to the advertisement.

2. It is not obligatory on the part of the University to call for interview every candidate who possesses the essential qualifications.

3. The number of vacancies may change.

4. The University may also prepare panels of suitable candidates for appointment against vacancies occurring within a specified period,

Detailed instructions, specialisations, various allocations and reservations concerning the various posts and other details are available with the application forms. These can be obtained from the Cashier, Panjab University, Chandigarh personally on payment of Rs. 2/- or by making a written request to the Assistant Registrar (Estt.—I), Panjab University, Chandigarh, accompanied by self-addressed stamped (worth Rs. 3.40) envelope of 23 x 10 cms. and postal order of Rs. 2/- drawn in favour of the Registrar, Panjab University, Chandigarh.

UNIVERSITY NEWS

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

Cultural Dimensions of the Making of Modern India

DOCUMENTATION UNIT
27 JUL 19
C.F.T.R.I., MYSORE

Nemai Sadhan Bose*

Long historical traditions, the British Indian administrative system, legal and political institutions and the directional trends of the Indian national movement laid the foundations on which the future independent state of India was to be built up. The series of constitutional reforms spasmodically introduced in the years preceding independence, had prepared the way for a parliamentary democracy, an independent judiciary, local self-government and an administration resting heavily on British tradition of legal bureaucratic authority. India, like many other commonwealth countries, had inherited from the British some of their institutions and certain aspects of political life and belief. No proper understanding of the dilemmas which countries like Canada, Nigeria, India or for that matter the United Kingdom face today, is possible without some consideration of the "imperial dimension."

The British conquest of India was essentially political, not cultural. Yet, the challenge of the Western Christian culture and civilization led to interaction, assimilation and synthesis which were characteristic features of the Indian renaissance or awakening. The capacity for absorption and accommodation had always been a conspicuous character of Indian life. Thus, the western values such as liberty, equality, democracy or human rights found a congenial soil and environment to grow and expand in India, so long as they did not seem to threaten the basic structure of social life. In this respect the history of India in the modern period has been strikingly different from many Afro-Asian countries which joined the Commonwealth. Explanation and the roots of Indian democracy and secularism are to be found, along with other factors, in the nature of the British impact on the subcontinent.

The most important agency of Westernization or modernization was English education. It has been acknowledged as the lever which moved the medieval Indian world after centuries of inertia. The introduction and spread of English education, especially since the foundation of the Universities in 1857, had far-reaching effects on every sphere of life and thought in India including the struggle for freedom. Most of the reformers, religious leaders and nationalist leaders were deeply influenced by the New Education while drawing sustenance from the rich cultural heritage of the country. At the same time the creation of a small English-educated class and the continued importance given to the English language on the one hand and the steady overall decline in the teaching of English at school and college levels have created complex socio-economic problems. It is a major dilemma in modern India.

A comparative study of the situations in India and Africa, or India and Third World countries, underlines the tremendous importance of historical traditions—political, religious, social and cultural. The pattern of developments in India has been very different—not simply because the colonial rule in India was of a different sort, but because

(Continued on page 8)

[Based on the presentation made at the 14th Quinquennial Commonwealth Universities Congress, 1988].

**Vice-Chancellor, Visva-Bharati, Santiniketan-731 236*

Resource Allocation for Higher Education

LESSONS FROM USSR

M.M. Ansari*

I

There are vital differences in the approaches to plan for the development of higher education in socialist and capitalist countries. An important difference is that while in the capitalist countries the planning for expansion and diversification of higher education is largely determined on considerations of social demand and rates of returns to education, in the socialist countries manpower approach is the main criterion for planning educational development. A common feature of the system of higher education in both types of countries is that the admission to various programmes of higher education is given mainly on the basis of merit of individual student and his capacity to learn and benefit from university education. Following such an approach, an assessment of the teaching and research load is made for each department and course of studies, and accordingly, reasonable amount of funds are made available by the central and provincial governments and industries, etc. Thus, in both types of countries, the resources requirement of the institutions of higher education are essentially linked with the planned number of students to be enrolled under various programmes of study.

As against this, the system of higher education in India has been functioning under the exigencies of social demand for education. The expansion and diversification of the system have not been desirably linked with either rates of returns to courses of study and/or manpower requirements of various sectors of development. It is precisely for this reason that (i) some of the educational programmes like elementary and vocational education, which are estimated to yield high rates of returns, have received less than desirable allocation of resources as compared to general higher education; (ii) due to the lack of effective manpower planning there are shortages of technical personnel in certain areas and surpluses in some others which consequently impede the process of development; (iii) the quality of the university output is generally felt to be much lower than desired since the government has been unable to provide for physical and financial resources commensurate with the demand for higher education and (iv) the problem of graduate unemployment has aggravated since the annual production of graduates is more than that could be absorbed by the economy.

In Soviet Union, such problems as above are tackled by way of effective planning for and utilization of physical and financial resources for the development of higher education. The method of resource allocation for higher education in Soviet Union is briefly described to indicate as to how the mechanism of resource allocation is geared to ensure the realization of objectives of the institutions of higher education. Wherever necessary reference is made to the practices in India to derive relevant conclusions on the basis of appropriate comparisons.

The plan of this paper is as follows : Section II outlines some of the major problems that are faced by the system of higher education in India. This background material is provided to assess the worthiness of the measures taken by the Soviet Union to tackle the problems of higher education in India. Section III describes the method of resource allocation in Soviet Union and spells out the advantages of the norms based distribution of funds in India. Section IV deals with various approaches and practices of Soviet Union for maintaining high quality of teaching as well as ensuring proper accountability of the university system to the society and the economy. Lastly, Section V, draws the relevant policy conclusions for bringing about reforms in the method of financing Indian higher education.

II

Before we describe the salient features of the technique of higher education planning in USSR, it is important to enumerate some of the major problems which are confronted by the university system in India. The search for remedial measures having significant bearing on the development of

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[Based on the author's report of a study visit to Peter Stucka Latvian State University, Riga, USSR.]

**Joint Director (Research), Association of Indian Universities, New Delhi.*

higher education ought to be undertaken on continuing basis in order to ensure that university system caters to the ever changing and growing socio-economic needs of our plural society. In this context, a number of factors have to be taken into consideration to develop proper perspective and devise strategies for nurturing a sound system of higher education. Firstly, the size of higher education system in India is the third largest system in the world, after USA and USSR, and being one of the countries with lowest per capita income, even as compared to many developing countries, a major problem is to how to support and sustain the system without unduly impairing the quality of higher education or reducing the number of those who aspire for further education and have proven capability to benefit from it. Due to the increase in population as well as the rise in levels of elementary and secondary education, the demand for higher education has invariably been rising. The growth in incomes of the people and their aspiration to enhance their social status and improve cultural lives are expected to spur this demand further. The implication of which is that huge financial investments would be required for meeting the varied educational needs of Indian people. Keeping in view the competing claims of other sectors of development especially those which make direct assault on poverty and those having bearing on long term sustenance of the national economy, there is no sign of increase in allocation of resources for higher education commensurate with the rise in the demand for the same. Infact, this is precisely what has happened in the past. This therefore calls for devising low cost and efficient educational programmes which would ensure reasonable quality and quantity of education.

Secondly, inadequacy of financial resources has contributed a great deal to the deterioration of quality of education as well as impeded the efforts to bring about reforms in respect of both teaching methods and the university curricula suitable for socio-economic needs of the society. This is amply proved by the growing number of unemployed university graduates who are generally found to have inappropriate and inadequate knowledge of their subjects. Many of them have therefore become 'unemployables'. This causes sheer waste of manpower resources as well as monetary resources spent on their education. The question therefore is whether the planners in India can afford to ignore or evade this problem? As it is a serious cause of concern which ought to be addressed by the educational planners in India, we shall see later whether Soviet experience can provide any guidance to us on this issue.

Thirdly, university teachers are the backbone of the higher education system everywhere. The role of the teaching community in India in strengthening the education system as well as helping the nation in the formation of human capital of high moral and scientific qualities has visibly diminished. The standards of education even in the courses of studies, which do not require sophisticated teaching equipment or are not lab based, have been found dismally poor. There are atleast two attributable reasons for this. One, sufficient teaching inputs from teachers are lacking. The university and college teachers have neither been teaching for stipulated period of time nor have they been paying due attention in tutorial classes to the problems of every student. They are also not using modern teaching methods to facilitate the learning process and make the teaching effective. Two, as there is a very close relationship between teaching and research, the extent of research activities and the quality of output indicate the standard of teaching at the university departments. The fact that research is neglected or given low priority at most of the teaching departments of universities, has seriously impaired the quality of higher education. The research activities at colleges which cater to about 85 per cent of university graduates of the country are almost negligible since there are neither adequate infrastructure support services nor conducive environment for research. The twin questions of enhancing qualities of teaching and research are tackled in Soviet universities with considerable success through a sound method of assessing performance of teachers to which we shall return later.

We shall discuss below as to how the planners and educationists in Soviet Union deal with such problems as above. As our primary objective has been to study the approaches employed by the Soviet Union for making allocation of resources for university development, we shall discuss this aspect in the following paragraphs and see as to how financial mechanism is employed by the planners for maintaining standards of education as well as ensuring accountability of university system to the society and national economy.

III

The resources requirement of education budget are estimated by using norms. These norms are used in educational planning for two different purposes : (a) the preparation of education budget, and (b) the control and checking of expenditure. This requires a large number of norms, applicable to different types of expenditure. Separate norms are laid down for each separate item of expenditure such as :

(a) Wages and salaries
(b) Books, journals and stationery
(c) Administration and travel
(d) Equipment and furniture
(e) Repairs of buildings and equipment
(f) Scholarships
(g) Sports and culture
(h) Capital expenditure

Two types of norms are laid down by the planning authorities. Firstly, physical or material norms which are expressed in physical units; and secondly, financial and budgetary norms expressed in monetary terms. Physical norms provide a basis for ensuring standardization between different institutions and for ensuring a uniform quality and satisfaction of requirements. They represent standards of relative constant value, and are determined, where possible, on the basis of scientifically determined standards, for instance, of heating and lighting requirements, etc. Thus, physical norms will not vary between regions. On the other hand, financial norms which represent the translation of physical norms into monetary terms, differ according to regions and reflect differences in prices and regional transportation, tariffs and so on.

Norms may be expressed as individual norms, corresponding to individual items of expenditure or combined norms which group together a number of individual norms, for instance, domestic expenditure, which includes cleaning, repairs and maintenance as well as heating, lighting, etc. For some purposes, a number of combined norms may be grouped together to show, for example, the total cost of maintaining a classroom.

Estimates for establishments are drawn up on the basis of individual norms. In some cases individual norms are also used for overall planning, in cases where combined norms must be made more precise due to changes in prices or basic rates of wages and salaries and amounts of grants to pupils. However, combined norms are mainly used when drawing up overall plans.

Financial norms may be expressed in terms of expenditure per day, month or year. Norms fc items such as heating, lighting, furniture and equipment are expressed in terms of annual expenditure norms for wages and salaries or amount of stipend are expressed in terms of monthly rates, whereas norms for food and medical provisions are expressed in terms of daily expenditure.

A further distinction must be made between compulsory norms and calculated norms used simply for calculating purposes. Compulsory expenditure norms, for example, relating to wages and salaries are established by the Government. Basic wage and salary rates are laid down on the basis of teache qualifications and length of experience and apply throughout the country. On the other hand, calculated norms, which are not compulsory and are used simply as information, reflect mean average monetary outlay per costing unit (such as classroom, pupil, square meter, etc.) in different regions or districts in the light of local conditions, prices, etc. Mean norms are used both in drawing up plan for individual items and in the overall planning of establishment. The norms are most widely used for preparation of overall plans.

In many cases the calculation of norms presents considerable problems. For example, it is extremely difficult to establish a norm for domestic expenses including heating, lighting, etc. which vary according to the location and type of school building and local characteristics. For such expenses, it is impossible to set up a uniform material or monetary norm on a scale suitable for the whole country or its sub-divisions.

The method of using norms has been adopted because of the belief that actual expenditure does not always correctly reflect an establishment's requirements. Actual expenditure may include a certain amount of non-productive outlay. For instance, in some establishments there may have been no economy in outlay on electric power, fuel or stationery. If the plan is based on actual expenditure, future expenditure on these items will simply perpetuate such inefficient use of funds.

Experience shows that planning of expenditure without use of norms might even contribute to irrational and uneconomic levels of expenditure. If expenditure is planned on the basis of actual previous expenditure, heads of establishment would endeavour to use up in full all funds provided for each item in the estimate, even if there was no need for such exnditure. Moreover, if expenditure is determined this way, identical requirements would be unevenly et in the same type of establishments. While from ear to year individual establishments would receive creased allocations, others would suffer from short-ges.

To obviate these defects, uniform material norms er costing unit have been worked out for domestic xpenditure on the basis of individual districts and rge cities. The selection of costing unit is very mportant for the preparation of such norms. Such election greatly influences the correct determination f costs and the distribution of resources between he individual economic regions.

It is impossible to determine for all expenditures ny single or all purpose costing unit. In the esti-nates for individual establishments, therefore, the orms of expenditure for wages and salaries and fficial journeys are drawn up in relation to one orker; the sustenance norms are drawn up in rela-ion to one pupil; the norms for teaching expenses are drawn up in relation to each class or pupil; the norms of outlay on stipends relate to one pupil; the norms of heating costs relate to one cubic metre of space inside the building; the norms of lighting costs are related to one lighting point or one square metre of the area of the premises; the norms for expenditure on cleaning the building, yard and street and other domestic expenses are related to one cubic metre of the premises, etc.

To sum up, planning authorities in Soviet Union believe that the use of norms rather than previous levels of expenditure for estimating future expenditure will achieve two objectives, namely, to satisfy requirements as fully as possible at a given stage, and to make the most rational and economic use of material and monetary resources.

Thus, the resources for university education are made available on the basis of defined norms, which

(i) allow for adjustments in monetary requirements from year to year due to changes in either prices or teaching load or special needs arising from changes in teaching methods, etc;

(ii) ensure equity in provision of educational infrastructure among the various institutions of higher education which, in turn, assist in maintaining uniform standard of education among different universities;

(iii) provide adequate resources for various programmes of studies in accordance with their requirements;

(iv) discourage overspending and check diversion of resources from one item to another and thus ensure efficiency in resource allocation and its utilization; and

(v) encourage the institutions of higher education to make similar attempt to plan for physical and financial resources and their effective utilization.

IV

In addition to the above advantages, another significant feature of educational planning in Soviet Union is that the approach of manpower planning is effectively pursued throughout the country. The application of this approach has helped (i) in controlling the number of graduates and specialists to be produced and trained under each field of studies as per the assessed needs of the economy; and (ii) in maintenance of uniform standards of education among all the universities. It is important that once the number of required graduates and specialists of different kinds and levels of expertise is determined on the basis of needs of various regions and sectors of the economy, financial resources are accordingly made available as per the defined norms to each university/institute. Since the Soviet Union follows a perspective plan for 5 and 15 years it is possible to assess requirements for graduates from time to time which in turn help/avoid the problem of shortages or surpluses of graduates in the country.

As regards the quality of education, every effort is made to ensure continuous improvements in standards of teaching. Some of the noteworthy features of the method of maintaining high quality of education may be described here.

First, each teaching and research department receives adequate amount of money on the basis of the well defined norms and student numbers as explained above. Every teaching department thus maintains basic and essential educational infrastructural facilities. The question of under funding as is the case with most university departments in India does not arise. The method of resource allocation ensures necessary provision for teaching and research which protects the system from degradation.

Second, in every university of Soviet Union it is obligatory for every department to conduct research in theoretical and applied areas and engage in contract research programmes from various cooperatives/governmental organisations. The research activities promote the twin objectives of : (a) earning additional incomes which are used for improving the infrastructural facilities of the teaching departments which, in turn, attract best students and teachers as well as enhance reputation of the university; and

(b) raising the quality of teaching inputs drawn from research outputs pertaining to both the relevant curricula and teaching methods and the requirements of the society. As the universities earn a significant portion of their income (about 20 per cent) from such consultancy research programmes, the above aspect of research help in the maintenance of high standard of education among the universities.

Third, every university teacher has to compulsorily engage in research programmes with a view to enriching his theoretical knowledge as well as making positive contributions to socio-economic life of the people, because the quality of research and the quality of teaching are positively related. This alone can help the teachers stay in the profession and the job. The mechanism of evaluation of teacher's performance is also very strong in the Soviet Union. A number of factors are taken into account for encouraging and retaining the best teachers in the system: (i) Students make assessment of performance of the teachers teaching them and every teacher has to teach for the stipulated number of hours; (ii) Based on students' evaluation and the quality of research conducted by the teachers, the head of the department makes his own assessment and accordingly directs the teachers from time to time so as to maintain a high standard of teaching; (iii) The employers of graduates/specialists provide some feedback to universities in respect of their attitude to work and the quality of job performance; (iv) Every five years there is thorough assessment of teachers' performance by the competent university authorities through the secret voting system. In order to renew the term of appointment of a teacher, the university authorities take into account various factors pertaining to the quality of teaching and research work done by a teacher over the previous five years. In such evaluation process, only the best teachers stay in the teaching profession.

The question of accountability of university system to the society and the extent of relevance of the educational programmes to the social and economic needs of the people have always been a major concern of governments everywhere since they finance the system. The intensity of such problems however vary greatly. It is invariably felt more seriously in developing countries like India which invest scarce resources on higher education and research with the expectation of enriching inputs to productive activities so as to expedite the process of development. In this respect the answer to the question as to what kinds of measures are taken in the Soviet Union to enhance the productivity in university system would be most interesting.

In the recent reforms of university education, an attempt is being made to ensure that the universities serve more to the productive interests of enterprises and organisations which are devoted to economic and social development. Following the manpower approach to educational planning, the students pursuing for degree courses or for equivalent specialized degrees, would be sponsored by different enterprises/organisations under the various Ministries in proportion of their requirements for fresh intake or recruitment in the future years. The enterprises would, in turn, pay a fixed sum of money per graduate student to the parent university. The income thus earned would be treated as additional income for the university till 1990 and thereafter the university would have to depend substantially on such incomes for sustenance. Obviously, the university which would (a) pursue such educational programmes as would cater relatively more to social and economic needs and help improve quality of output and enhance productivity in sphere of development, and (b) produce graduates/specialists of high quality, might be able to attract more sponsored students. This would obviously mean more monetary resources, high national reputation and prestige for such universities. Such a measure is thus expected to increase competitiveness among the universities for attracting an increasingly large number of sponsored students which would also mean more funds from enterprises. Curiously enough, every step is being taken by the Govt. to ensure that this reformative step succeeds which is most likely in a disciplined society like USSR.

V

The following relevant points emerge for consideration for orientation of higher education policy in India.

(1) There is no effective planning in higher education in India. This aspect needs to be given serious thought lest the existing problems should acquire unmanageable proportions. For instance, the number of colleges producing graduates are increasing beyond 5000 even though there are neither adequate basic facilities for teaching and research nor enough number of students to justify the existence of several hundred colleges. There are several university departments which lack infrastructural facilities and competent teachers, yet they are producing graduates who either remain unemployed or their productive capacity is much less than desired.

In such a situation, the approach of manpower planning, which essentially means that production of as many graduates as may be required by the society nd the economy, would provide an effective solution o the existing problem of proliferation of non-viable olleges and swelling number of unemployable uniersity graduates. It must be emphasised that techical aspects of manpower planning approach are nuch easier to tackle not only in centrally planned ocialist countries but also in mixed economies like ndia which have strong bases of the State and Cenral level of planning. In accordance with the magnitude and location of financial investments by regions and economic projects, manpower requirements of various kinds and levels could be determined and through the planning process adequate number or labour force with different levels of specialization could be produced by the universities and other institutions of higher learning. This would however require preparation of perspective plans which would take into account physical and financial investable resources as well as the nature of technologies to be employed for realizing optimum results.

(2) In order to ensure production of high quality graduates/specialists, it is important to provide for adequate infrastructural facilities for teaching and research. In this respect, advantage may be taken of the experience of Soviet Union especially in regard to norms based allocation of resources amongst the university departments. As described elsewhere in this paper, allocation of resources on the basis of norms ensures adequacy of funds, raises efficiency and productivity of monetary resources, dscourages diversion of funds and ensure equity in distribution of resources among all the universities; which, in turn, result in uniform educational standards in the country.

As against this, the prevailing system of funding universities in India is unsound as the same is neither based on scientific principles nor meets the requirements of the universities. In India, the universities institutions of higher education are financed by different sources such as Department of Education of the Central Ministry of Human Resource Development in the case of IITs and Institutions of National Importance, UGC in the case of Central Universities and Deemed to be universities, Indian Council of Agricultural Research in the case of Agricultural Universities and the State Govts. in the case of State universities and colleges. Some aspects of financing are jointly undertaken by two or more than two of the above agencies. Different funding agencies adopt different methods of allocation even for the similar programmes of studies which are generally neither efficient nor equitable. The available literature on the subject in India proves this point.

In order to minimise the ills of funding problems of universities, it would be worthwhile to follow the approach of resource allocation on the basis of standard norms for various items of expenditure under the different programmes of studies. As education is included in the concurrent list of the Constitution which is committed to ensuring equality of opportunity in every sphere of development, the uniform basis of distribution of Government funds is more desirable. It is important to point out that norms based allocation of resources allows for variations arising from special characteristics of course contents or regional location of the institutions. Such an approach would thus effect equity across the institutions and regions which would be consistent with the objectives of federal set up.

(3) There has been much theoretical discussion with regard to the extent of contributions made by university teachers in improving the efficiency of higher education. There has however been little practical gain owing largely to non-existent or inefficient system of evaluation of teachers' performance. There is hardly any instance to prove that any worthwhile attempt has been made in the past in India to identify unproductive or redundant teachers in the universities, let alone cleansing the teaching profession by driving such teachers out of universities. In this sphere, there is a lot to learn from the experience of Soviet Union which regularly monitors the performance of university teachers as we have already discussed above. In order to make the university system in India more socially and economically productive, it is imperative to entrust the system to competent teachers.

The profession of teaching cannot be divorced from research. The affiliated colleges in India which produce nearly 85 per cent of graduates do not have conducive environment for research. The reasons may be many, but the point is for how long educational planners in India would continue to envisage improvements in standards of teaching in such colleges without generating research activities. It is equally important to gauge the quality of research so as to provide desirable feedback into the teaching process. What follows is that teaching profession ought to be vitalized by retaining the best teachers whose performance should be regularly assessed on the basis of qualitative research and teaching. The dumping of qualitatively poor graduates and specialists would generate inefficiencies in management of national investments in economic and social programmes for development. This ought to be resisted even at some cost.

(4) The prevailing system of financing universities by the Centre and the State Governments allows for the simultaneous existence of the best or worst performing university departments, as judged from the quality of the graduates produced by them. Though there may be differences in the levels of grants received by them, they continue to co-exist and make increasing claims for govt. funds. This is because there is no effective measure either to improve the quality of teaching by using the financial mechanism or to let the inefficient departments be rooted out through the process of intense competition from the best performing departments. The main reason for this is that the Centre and the State governments provide funds to the universities on the basis of past trends and the future plans rather than performance in teaching or efficient utilization of funds. The recent approach of Soviet Union offer a solution to this problem as we shall discuss below.

In order to increase the returns from investments on higher education, it is desirable to increase competitiveness among universities and the allocation of resources should be linked with the performance of university departments as judged from quality and quantity of graduates produced by them. This objective can however be realized by direct financing of students rather than universities/institutions. The advantages of this approach are : (i) students would join the departments which they expect would give the best education to them, (ii) students would compete for the limited government funds, in which case the students with proven capacity to learn would have the chance of receiving government support, and (iii) since the students would be responsible to p for their education fully or partly, they and the parents would become more vocal about the quali and relevance of education offered by the univers ties. Moreover, another advantage of this approac is that it is possible to make obligatory for th government sponsored students to serve the countr for certain number of years after completing th course work. This would effectively check the phe nomenon of brain drain and thus minimise the was tage of scarce resources invested on them.

It is worthwhile to mention that the UGC ha already been following the approach of direct financ ing of students for research degrees in various disci plines. Many teaching departments have come t realise about the poor quality of teaching with them as their students cannot compete and qualify fo research fellowships. Such aspects need to be high lighted at various forums so as to sensitize all th sections which are affected by teaching performanc of universities. In brief, what is being suggested her is to finance higher education through student rather than the institutions which seem to yield les than optimum results. This is amply clear from th fact that of the total enrolment in higher educatio about 60 per cent pass out and those who do so les than 25 per cent of them score above 50 per cen marks. This therefore justifies the policy optio indicated above. □

[**The views expressed in this paper are those of the author and they should not be attributed to the organisation to which he is affiliated*]

CULTURAL DIMENSIONS OF THE MAKING OF MODERN INDIA

(Continued from page 1)

her long history, her religion and her heritage had made India a very different land. All great Indian thinkers and leaders of the modern period, from Rammohun Roy to Rabindranath Tagore, Bankimchandra to Vivekananda, Gandhiji to Jawaharlal Nehru and Indira Gandhi, drank deep from the nation's ideological and cultural reservoir of the present world. It will be impossible to realize why India chose to be a secular democratic state with an independent judiciary and self-government at the Panchayat level, unless the inner personalities and the mental make up of such men are taken into consideration.

It is also in the above context that the evolution of education and the formulation of the New Education Policy in India is to be understood and assessed. Historically, India has the tradition of encouraging a global perspective in education imparted in the educational institutions, especially at the University level. Tagore had once regretted that there were scientists who took pride in their knowledge of "human facts, without taking the trouble to know the man himself." Swami Vivekananda's vision of education as an instrument of man-making or Gandhiji's concept of basic education as a religion of service have hardly materialised in the field of education either in India or abroad. Yet, the emphasis on Man and the lofty universal aspect of their educational ideas continue to have a strong grip on our minds. The new Education Policy also has this as one of its goals. The Commonwealth or the Association of Commonwealth Universities and similar international bodies are also motivated by such ideas. Hence, the Indian historical experience is of great relevance to other countries.

The relation between education and culture and the role of the universities in disseminating culture and functioning as custodian of culture pose serious questions. Rabindranath Tagore said, 'Education is diamond, its glow is culture.' Does the education that is being given in the universities conform to this ideal ? The Indian universities, in general, have not been able to play their expected role in the field of culture. This is true of most universities in many other countries. A fuller analysis and debate on these issues should be encouraged by the universities. □

THE BRAIN DRAIN LOSS

"The biggest loss to the community due to brain drain has been to the teaching profession. Teaching requires a gift in much the same way as music or mathematics and the loss of potential teachers of quality has a cyclic effect on the quality of academic life," observed the noted scientist, Dr. Raja Ramanna, Chairman of the Governing Council of the Indian Institute of Science, Bangalore. Dr. Ramanna was delivering the convocation address at the first annual convocation of the Alagappa University, Karaikudi. Excerpts

Convocation

The mere possession of a degree is still a long way off from being useful straightway. What is perhaps more important is to be able to use the knowledge you have acquired, in such a manner, that it leads to something that is creative. Creativity is an aim which all young men all over the world, would want to strive for and the time for impotant decision-making towards this aim is when one is about to leave the university. A university degree by itself is not yet a measure of one's capacity to do new things. Creativity requires experience and cannot be obtained from books alone. Your teachers can help and interaction with others who have specialised knowledge adds to creative ability.

It is an interesting study how in different fields of knowledge the capability to be creative shows itself at different stages of one's life. In the Arts, e.g., in Music, one's gifts are noticeable at a very early age perhaps between the age of four and six and the associated training, which determines the future has to start at this early stage. It is for this reason the best musicians usually hail from families who are themselves musicians.

Another field of knowledge where one's gifts have to be assessed and nurtured early is the field of mathematics. While mathematicians continue to be productive till late in life, it has been observed that the capability of a mathematician can be destroyed, if he does not get the right education before, say, the age of eighteen. The one great exception to this is from Tamilnadu itself, where one of the greatest mathematicians of the world, Srinivasa Ramanujan, was born and survived bad training, bad libraries and a bad environment for creativity, but went on to amaze the world with his natural gifts. Unfortunately, we in India still confuse arithmetical ability with mathematics. That he could write down complex formulae, which belong to the forefront of mathematics, most of them without proof and whose proofs have now been supplied with the help of mathematics, which did not exist in his time, proclaim his genius and greatness.

To me, he is the greatest man Tamil Nadu has ever produced. It requires greatness to understand greatness and the credit of this goes to the atmosphere of Cambridge of those days. He was unable to get beyond a matriculation in Madras, but from the research papers he sent to Cambridge, he received all the Academic Honours any body could hope for. I specially make a reference to Srinivasa Ramanujan, as his life in a way sets a limit to what can be done under the most adverse of circumstances.

On the other end of the spectrum of knowledge are medical science and engineering. These disciplines require considerable experience and long years of observation and assimilation. Here, creativity appears as the result of integrated knowledge acquired over many years of patient study. Generally, progress in technology and knowledge involving interdisciplinary studies require more maturity and a wider understanding of human nature.

A cynic could say : we now produce many more people than ever before with high sounding University degrees, but there seems to be no sign of more Ramanujans, Ramans or even just quality engineers. I ask you, does this question have any validity ?

The answer to this requires a deep examination of both sides of the case. A misreading of the situation and our faulty sociological structure are responsible for such views but the comment, as such, cannot be brushed away.

The brain drain, which started as a trickle in the 60's from a minority but gifted group, has reached proportions of unbelievable magnitude. I am told that from the I.I.T. Madras, as many as 35% of the graduates migrate which include some of the best among them. Some brilliant and committed men do, however, stay on, but feel very apologetic about what they have done. Both the teachers and parents are responsible for creating a feeling that if one does not migrate there must be something wrong with the person concerned. The brain drain is responsible for the severe loss of talent which the country can hardly afford financially or otherwise. Whatever is said about brain drain being our brain's trust, it is going to have serious repercussions on our progress in the years to come.

One would have thought that those going abroad would have done sufficiently well so as to capture the Academic community in the country, they have migrated to. Though much is said about the excellent things that non-resident Indians are supposed to be doing abroad, I cannot say that they have done so well as people make it out to be. I agree that they do make more money, but it is sad to see these brilliant young men, who could have made an excellent career here, taking up lowly post abroad only for the purposes of enjoying a higher standard of living; (not an Indian standard for happiness), knowing fully well that even the most menial of jobs in the West are well paid. I can understand people, who feel academically discriminated, wanting to migrate, but for the others to leave home and hearth to acquire wealth knowing that at best they will be second-rate citizens for quite a few generations, is tragic.

The biggest loss to the community due to brain drain has been to the teaching profession. Teaching requires a gift in much the same way as music or mathematics and the loss of potential teachers of quality has a cyclic effect on the quality of academic life. The loss of inspired teaching gives rise to slipshod-work, careless solutions and a disregard for bringing out one's best. To the public, it shows itself as faulty transmission lines, impossible telephone systems, roadways which are not worth the name, Ph.D. theses which have no academic value, copying, etc. Mediocrity produces loss of enthusiasm leading directly to loss of quality. All this leads to the feeling that a good job within the country is where the work requires, not a dynamic man wanting to do something creative using both his hands and brains, but one who sits at a table and while away his time. It is not clear what it is, in our society, has led us to an ideal and an environment that, even the most dynamic and creativ of persons, is reduced to mediocrity. I say all this because, know that we have some of th best people in the world and we are capable of the highest of standards. What makes one sad is that we can do so much more than what we have actually achieved.

I have placed these views before you, not to give you the impression that we are a lost country, far from it, but merely t review our system so that we can rectify its faults and weaknesses in time. Our greatest enemy i complacency and this has done much harm in the past. ☐

Attention Scientists and Technologists

Indian Expertise in Science and Technolog

The Research Cell in Economics of Education of the Association of Indian Universities is conducting a survey of Indian expertise in science and technology in the University sector. It is proposed to prepare a comprehensive database of the skills, knowledge and facilities of the university level institutions as well as a directory of experts in various disciplines of science and technology. The survey is also intended to catalogue the expertise and current research work of Indian scientists and technologists in various fields of science and technology, and will be used as an input for the compilation of a comprehensive database on the scientific and technical manpower in the country. The database will provide a ready reference to the industry, commerce and allied sectors of Indian economy for identifying experts in the relevant fields.

The scientists and technologists engaged in teaching and research in the universities and university level research institutions in India **at the lecturer or equivalent and above levels only** are requested to fill-up the prescribed form, which can be had from the undersigned. The completed form should be returned latest by **September 30, 1988**.

The responses from the academic and research staff are solicited, and their cooperation would be highly appreciated in our venture to build up a comprehensive database. For the prescribed form, kindly write to :

M.M. Ansari
Joint Director
Research Cell, Economics of Education
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Social Science Information Problems and Prospects

A three-day National Seminar on Social Science Information Problems and Prospects was organised by the North Eastern Hill University (NEHU). Prof. R.K. Mishra, Vice-Chancellor, NEHU, inaugurated the seminar while the valedictory address was delivered by Prof. J.B. Bhattacharjee, Dean, School of Social Sciences, NEHU.

The seminar discussed four themes spread over seven academic sessions at which 44 presentations were made.

The first theme discussed the structure and development of social sciences. The ten presentations thereon focussed attention on the disciplines of sociology, economics, geography, social science research in India and North-Eastern region with emphasis on trends, dissemination of information, problems and prospects.

Information needs and user studies, in ten presentations, was the second theme. The discussions centred around two major areas : meanings of information and information needs; and information use patterns and information seeking behaviour of user. Issues under the former were tackled at the theoretical level while the issues under the latter were highlighted with the help of empirical knowledge on various aspects.

The third theme was concerned with the characteristics of social science literature and its availability. 14 papers were presented under this theme and the focus of discussion was on the types and characteristics of literature available for social science research in general, and information needs in the form of literature for researches in the field of history, anthropology, and area studies like Pakistan, in particular.

The fourth theme discussed the aspects of information system, services and planning with the help of 7 papers. One paper discussed the relevance of international information systems for India while another presented a plan for the North Eastern Regional Social Science Documentation and Information System. Other papers discussed the problems and possibilities of information technology, information for social services such as health care services, etc.

At the conclusion of the seminar, the following recommendations were made :

(1) The UGC and ICSSR should identify the scope of various social science disciplines to clearly demarcate their areas of research, and also to identify thrust areas.

(2) Appropriate user studies be conducted and adequate financial assistance provided by concerned organisations for such studies.

(3) With a view to providing appropriate assistance to the information-seekers, adequate financial assistance and other professional guidance be provided to libraries and documentation / information centres and steps taken to build up balanced library collections to help research activity carried out by the information-seekers in social sciences.

(4) There should be regular interaction between the information seekers and the library / information centres through seminars, conferences, workshops, etc. in view of the enormous growth of literature in various social science disciplines and large inflow of research funds.

(5) Indexing, abstracting and bibliographic tools be compiled in various disciplines. Maintaining that the research activity cannot be effective and productive without specifying, well accessible source materials in social sciences, it was further recommended that all possible steps be initiated to index and make available information sources in each discipline for the promotion of research in social sciences.

(6) For research on neighbouring countries, it was decided that the Govt. of India and other concerned authorities be approached to set up a national centre for collection, dissemination, and utilisation of documentary and non-documentary information on such countries. However, in view of the urgency of the situation obtaining in the country, a national centre on Pakistan studies be set up immediately with adequate resources at its disposal.

(7) A centre be ablished as Regional Data Centre to acquire and process information on North-East India from various sources for purposes of dissemination of information.

(8) The nature of social science research literature calls for specialised library and information science manpower to handle the requirements of social scientists. The seminar recommended that specialised library and information science courses on social science information may be provided at select institutions.

(9) To enable the social scientists use various types of information/data in their research, data banks should be set up to study and retrieve such information regularly. Such data banks could be established at regional levels with an apex body at the Centre to coordinate activities among the regional data centres.

(10) In order to familiarise with the research methodologies of various social science disciplines the seminar recommended that :

(a) Courses on research methodology be made compulsory in the Master's degree programmes of various disciplines including that of Library and Information Science; and

(b) The Library and Information specialists should conduct specialised courses for social science user groups to educate them in use of available information sources. This may, in turn, help in understanding their information gathering habits as well.

Mycorrhizae and its Biotechnology

An international Symposium and a Regional Training Workshop on "Basics of Mycorrhizae and its Biotechnology" will be held at the Jawaharlal Nehru University from 7-18 December, 1989. About 25 participants and 10 specialists from India and abroad are likely to attend this Workshop/Symposium. The main purpose of this Workshop is to encourage young scientisis to initiate and promote the Mycorrhizae researches at their respective institutions. The Workshop, among other things would cover the following topics :

(a) Screening, diagnostic features, fluorescent anti-body and ultra-structural analysis of Mycorrhizal fungi;

(b) Cytology and Histochemical studies;

(c) Growth kinetics of Ectomycorrhizae in pure culture and its evaluation;

(d) Aseptic spore germination of VAM, photoplast fusion, genetic analysis, pattern formation and cultivation on tissue/callus tissues;

(e) DNA restriction fragments analysis;

(f) Determination of polyphosphate granules (energy dispersive X-ray analysis) photophatases, RNA and protein patterns;

(g) Genetic analysis of irradiated (alpha, beta and gamma) Mycorrhizal spores and the genetic manipulation;

(h) Mass inoculum production, storage, transfer and germplasm preservation;

(i) Mobilisation of nutrients, water (Radio tracer techniques);

(j) Cell metabolites analysis using Spectrophotometry and gel Electrophoresis; and

(k) Mycorrhizae—its Biotechnology.

This Workshop is the follow up of the first National Mycorrhizae Workshop which was organised in New Delhi in March last year by the Jawaharlal Nehru University and International Development Research Council of Canada, duly supported by various other agencies like UNESCO, DST, DNES, CSIR and ICAR. The National Workshop had identified areas of duplication and cases of obsolete research and recognised the need for regular contacts to promote cooperation, exchange of information and exchange of germplasm.

The International Symposium to be held during December 19-21 would cover the following : (a) Functional analysis of the ultrastructure; (b) Molecular concepts and genetic manipulation; (c) Practical applications; (d) Agroforestry; (e) Food and Feed; (f) Reclaiming waste land, used coal mines and sand dunes; (g) Arresting desertification; (h) Biotechnological breakthrough in mass production, preservation and transfer as Biofertilizer; Role in Disease resistance; Nutrient mobilization; and Combating drought stress.

The topics proposed to be discussed at the plenary session include : Preservation of germplasm; Isolation, staining and systematics; Cytology and genetics; Concepts in physiology and biochemistry; and Host-plant resistance to bacteria, virus, fungi, insects and nematodes Interaction with other soil microbes.

Further information and details can he had from Dr. Ajit K. Verma, School of Life Sciences, Jawaharlal Nehru University, New Delhi.

Courses in Textile & Sugar Technology

Guru Nanak Dev University proposes to start new degree courses in textile technology and sugar technology. The university has also decided to set up a new department of applied linguistics in the School of Punjabi Studies from the next academic session. This was revealed by Dr. G. S. Randhawa, Vice-Chancellor, while addressing a meeting of the Senate recently.

Dr. Randhawa said the university was endeavouring to start more job-oriented courses and the courses in the School of Life Sciences, Physics and Chemistry Departments were being modified in such a way that they could meet the challenges being faced by the society today.

A UGC Academic Staff College has already started functioning on the university campus to provide orientation courses to the college and university teachers. A youth training centre would also be set up on the campus by the Directorate of Youth Services, Punjab.

Dr. Randhawa said that he would approach the Punjab Government to acquire land for the construction of the university's regional centre campus at Jalandhar. The university also proposes to start a postgraduate diploma course in journalism at Jalandhar. The Vice-Chancellor said the university would approach the Punjab Government for the release of the Rs. 25 lakh grant as already announced by the Governor for the construction of Guru Nanak Bhavan.

Mr. Amrik Singh Pooni, State Education Secretary, assured the members that the Government would provide adequate financial assistance to the university for the development of projects and for starting job oriented courses. He also assured that there would be no retrenchment of college teachers due to the shifting of the +2 classes from the colleges to the schools from 1990.

Computer Science Courses

The Postgraduate and Research Institute of the Dakshina Bharat Hindi Prachar Sabha, Hyderabad, which has been conducting a diploma course in computer science and word processing in Hindi for the past two years, is also now offering courses in computer sciences, multilingual word processing and data entry operation in Hindi, Telugu and English. This was stated by Mr. V. Anjaneya Sarma, Registrar of the Institute.

The Rs. 30-lakh computer at Hyderabad and at Madras where the Sabha runs similar courses, has tri-lingual word processors—"lipi" developed by the CMC Limited, BBC micro-computers with colour facilities and sound synthesis, a mini-computer, a set of personal computers and bi-lingual word processors.

The Hyderabad centre has a mini-computer, a set of personal computers and bi-lingual word processors. It has "lipi" in English, Hindi and Telugu, while at Madras Tamil has been substituted for Telugu.

Computer Aided Library & Information System

The Department of Library and Information Science of North-Eastern Hill University organised a Workshop on Computer-Aided Library and Information Systems and use of CDS/ISIS Retrieval System in collaboration with IASLIC and NISSAT from 23-28 May, 1988. The workshop was inaugurated by Prof. S.K. Agrawala, Secretary, Association of Indian Universities.

The objective of the workshop was to introduce the Library personnel working in North-Eastern Region to computer applications in libraries and use of CDS/ISIS Retrieval system. The following areas formed the course content : (a) Computer system : An overview, (b) Computer Application, (c) Software requirements for LIS house keeping functions, (d) Standards for Input/Output, (e) System utilities, (f) Software modules and house keeping, (g) CDS/ISIS : Introduction, Formating/Editing, (h) Database creation, (i) Inverted File Construction, (j) ISIS user programme, and (k) System Selection : Basic Considerations.

Over 25 participants from Guwahati, Jorhat, Tura, Shillong, Imphal, Itanagar, Calcutta, Dibrugarh, Aizawl, New Delhi, Agartala and Kharagpur, participated in the workshop at which practical demonstrations and group discussions were also organised.

Academic Staff College at Gauhati Varsity

The Gauhati University has established an Academic Staff College for organising orientation courses for newly appointed university/college lecturers and refresher courses for the in-service teachers. The first such course is expected to start sometime towards the end of July 1988.

The Academic Staff College will also serve as catchment area covering the Universities of Gauhati, Manipur and Dibrugarh and the affiliated colleges. The College will function under the guidance and control of an Academic Advisory Committee under the Chairmanship of Vice-Chancellor, Prof. D.P. Barooah.

Orientation Programme for Administrators

The Ministry of Human Resource Development proposes, it is reported, to start this year a massive orientation programme for education administrators at district and block level. The programme will initially cover 10,000 personnel working as educational administrators right up to district and block levels. The National Institute of Educational Planning and Administration (NIEPA) will provide basic course material and facilities for this programme.

The programme is being undertaken to involve people in the process of management of education and administration as envisaged in the national policy on education. The main objective of the orientation programme is to develop awareness about planning and management. It will focus attention on operational modalities and the role and performance of various functionaries in the field of educational training and management.

Student Counselling and Employment Cell

The Gujarat Vidyapith set up in October 1987 a Student Counselling and Employment Cell to tender advice and guidance to students from rural and tribal villages in matters of admission, career and employment as also to provide individual counselling in solving their personal problems. In this short span, the Cell has identified potential employers, full-time and part time job placements, prepared students to face career/job interviews, administered personality traits tests and offered individual and group counselling on personal problems. The Cell has identified 55 employer agencies, who intimated 258 vacancies. 125 student candidates were advised to apply for these vacancies. 175 students were prepared for successful career interviews. In May-June 1988 vacations, temporary employment was secured for 25 students on an average for Rs. 800/- to 1000/- per head plus free boarding and lodging facilities provided by the employer agencies for conducting famine relief programmes. Career talks, group discussions and agency visits were organised for 450 students. 25 School/College career teachers attended a four day career workshop held at Gujarat Vidyapith, Ahmedabad. 20 students were motivated for self employment pursuits. Personality traits test was administered to 40 students.

The Cell will welcome exchange of information with similar agencies in all Universities.

AIU News

Inter University Youth Festival 1988

If I were to look over the whole world to find out the country most richly endowed with all the culture, wealth, power and beauty that nature can bestow in some parts of paradise on earth—I should point to INDIA.

—**Max Mueller**

Culturally, India is the most complex, multilayered and multi dimensional land. Fairs and festivals have played a vital role in sustaining and fostering our cultural heritage. Indian calendar is indeed an unending procession of festivals—religious, social, cultural and seasonal.

Inter University Youth Festivals have been instrumental in promoting Indian art and culture amongst the university youth. As will be recalled, the youth festivals had been discontinued two decades ago and the Association of Indian Universities (AIU) realising their potential in fostering dynamism in the youth revived the Inter University Youth Festivals in 1985, coinciding with the International Youth Year. NAMYFEST celebrations still tickle the memory of the youth. These festivals provide a forum to the young university artists to give expression to their creative instincts.

AIU has invited proposals from various universities for hosting the Inter University Zonal and National Youth Festivals for the session 1988-89. In the first instance, four Inter University Zonal Youth Festivals will be held in which universities falling in the respective zones would be invited to participate. Thirty participants per university, including officials and accompanists, will participate in the Zonal Youth Festivals. Selected participants from each of the four zones would be invited to the Inter University National Youth Festival.

The programme of the Youth Festivals comprises five major events viz. Music, Dance, Theatre, Fine Arts and Literary Activity. It is hoped that Festivals will be allotted to the contending universities by the month end.

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month, while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research scholars and students of education are welcome to use these resources. The Library is open from 9-00 a.m. to 5-30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

RESEARCH IN PROGRESS

A List of Research Scholars Registered for Doctoral Degrees of Indian Universities

SOCIAL SCIENCES

Sociology

1. Ahluwalia, Rachna. *Professionals in the making : A sociological study of medical students in Medical College, Rohtak.* Panjab. Prof. K.P. Singh, Department of Sociology, Panjab University, Chandigarh.

2. Chitra, S.S. *A comparative study of the processes of communication among the tribes of Nilgris.* Kerala. Dr. J.V. Vilanilam, Prof. and Head, Department of Communication and Journalism, University of Kerala, Trivandrum.

3. Nema, Shrilekha. *Indore Nagar ke Hindu samaj mein dahej.* Devi Ahilya, Dr. V.C. Tongia, Prof. and Head, Department of Sociology, PMB Gujarati Arts and Law College, Indore.

4. Sachdeva, Rekha. *Socialization of the child in an industrial society, with special reference to slum areas of Indore.* Devi Ahilya. Dr. K. P. Pothan, Prof. and Head, Department of Sociology, Indore Christian College, Indore.

5. Sivan, Y. S. *Social and psychological adjustment of elderly Nayar women in Kerala.* Kerala. Dr. M. Indukumari, Department of Sociology, University of Kerala, Kariavattom.

6. Ugin Gomez, J. *Causes and consequences of child labour, Kerala.* Kerala. Dr. Manu Bhaskar, Department of Sociology, University of Kerala, Kariavattom.

Political Science

1. Mohanakumar, K. *Ethnic crisis in Sri Lanka.* Kerala. Dr. P. John John, Prof., Bishop Moore College, Mavelikara.

Economics

1. Awasthi, Surendra Kumar. *Socio-economic study of infantry officers of the Indian army.* Devi Ahilya. Dr. R.K. Dubey, Dean, Students' Welfare, Devi Ahilya Vishwavidyalaya, Indore.

2. Bohare, Niharika. *Dakshin Pashchim Madhya Pradesh janjati shram ka arthik shoshan.* Devi Ahilya. Dr. (Mrs.) T.K. Vajdi, Reader, Department of Economics, Devi Ahilya Vishwavidyalaya, Indore.

3. Dalbir Singh. *Common property resources and rural economy in Himachal Pradesh.* HP. Dr. M.S. Rathor, Department of Economics, Himachal Pradesh University, Shimla and Dr. N.K. Sharda, Department of Economics, Himachal Pradesh University, Shimla.

4. Dubey, Hari Om. *M.P. mein vaniki vikas kee samsyayen evam sambhavnayen : Damoh Jile ke sandarbh mein vishesh adhyayan.* HS Gour. Dr. N.D. Goswami.

5. Geersagar, S.V. *Economic analysis of working and impact of regional rural banks with special reference to Ratnagiri Sindhudurg Gramin Bank.* Shivaji. Dr. S.S. Sahasrabudhe,

Chh. Shahu Central Institute of Business Education and Research. Kolhapur.

6. Jain, Ajit Kumar. *Deendayal Upadhyaya ke arthik vicharon ka vishleshan evam vartman Bharat mein unke auchitya ka parichaya.* HS Gour. Dr. P.K. Patankar, Reader, Department of Economics, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

7. Jain, Chandresh Kumar. *Sagar Sambhag ke Damoh Jile mein State Bank of India, Lead Bank dwara krishi ka vitt poshan.* HS Gour. Dr. B.K. Jain, Department of Commerce, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

8. Jain, Seema. *Krishi upaj vipnan : Samsyayen evam sambhavnayen : Sagar Sambhag ke vishesh sandarbh mein.* HS Gour. Dr. M.D. Goswami, Shaskiya Balak Mahavidyalaya, Sagar.

9. Khambete, Jayeshree Devdatta. *A comparative study of EGS and IRDP schemes with special reference to Satara District.* Shivaji. Dr. Sahasrabudhe, Chh. Shahu Central Institute of Business Education and Research, Kolhapur.

10. Khare, Krishna. *A study of economic development of Baghel Khand region : An inter district comparision.* HS Gour. Dr. O.P. Mishra, Govt. Girls College, Sagar.

Law

1. Kasrekar, Vandana. *Study of law pertaining to juvenile delinquency in India specially relating to M.P.* Devi Ahilya. Dr. G.C. Kasliwal, 24 Sarvodaya Nagar, Indore.

2. Vijayawargiya, Kukulita. *Problems of judicial independence in India : A critical and comparative study.* Devi Ahilya. Dr. G.C. Kasliwal, 24 Sarvodaya Nagar, Indore.

Military Studies

1. Jain, Vinod Kumar. *Geostrategic considerations and weapon systems with special reference to the security of India.* Devi Ahilya. Dr. O.P. Sharma, Department of Military Studies, Govt. P.G. College, Mhow.

Commerce

1. Patil, V.S. *Causal analysis of changes in labour force participation rates vis-a-vis manpower planning in India with special reference to Maharashtra.* Shivaji. Dr. R.M. Tungare, Chh. Shahu Central Institute of Business Education and Research, Kolhapur.

2. Sarmah, Smriti Rekha. *Micro level planning : A case study of Sarupathar.* Manipur.

HUMANITIES

Philosophy

1. Kamalam, R. *Concept of God in the philosophy of Whitehead.* Kerala. Dr. K. Saratchandran, Prof. and Head, Department of Philosophy, University of Kerala, Kariavattom.

2. Radha Rani, P. *Gandhiji and world religion.* Kerala. Dr. K. Saratchandran, Prof. and Head, Department of Philosophy, University of Kerala, Kariavattom.

Language & Literature

English

1. Rathi, S. B. *Fantasy in Miss Iris Murdoch's fiction.* Shivaji. Dr. S.B. Sagare, Department of English, S.B. Zadbuke Mahavidyalaya, Barsi, Distt. Solapur.

Sanskrit

1. Champa Devi. *Shaddarshanon mein chitra kritiyon ka sameekshatmak adhyayan.* HP. Dr. Nardeo Shastri, Department of Sanskrit, Himachal Pradesh University, Shimla.

2. Sharma, Kishori Lal. *Mahabharat mein vastukala.* HP. Dr. (Mrs) Vidya Devi, Department of Sanskrit, Himachal Pradesh University, Shimla.

3. Vijayvargiya, Vimala. *Mudrarakshas natak ka manovaigyanik adhyayan.* Devi Ahilya, Prof. Banshidher Shastry, 17 Tilak Path, Indore.

Hindi

1. Rathore, Arjun. *Swatantrata parvarti Hindi kee khojpoorna patrakarita : Ek adhyayan 1947 se 1990 tak.* Devi Ahilya. Dr. Rajendra Mishra, 9/2 Snehltaganj, Indore.

Marathi

1. Joshi, M.B. *Shri Pant Maharaj Balekundrikar : Vyakti ani vangmaya : Ek abhyas.* Shivaji. Dr. H. B. Kulkarni, 'Sumandar' Kasba Peth, Phaltan.

2. Modi, A.M. *Marathi atmacharit per Vangmayatoon ghagdnare samajdarshan : Kalkhan, 1870 te 1987.* Shivaji Dr. H.B. Kulkarni, Sumandar, Kasba Peth, Phaltan.

3. Mokashi, S. A. *Natyacharya Shri K. Kolhatkar va natyacharya K.P. Khandilkar yanchya natakancha tulnatmak abhyas.* Shivaji. Dr. H. B. Kulkarni, Sumandar, Kasba Peth, Phaltan.

4. Patil, J.P. *Shri Gopalnath Maharaj yanche shishya : Govindnath yanche charitra ani kavya : Ek abhyas.* Shivaji. Dr. H.B. Kulkarni, Sumandar, Karba Peth, Phaltan.

Manipuri

1. Aggarwal, Kailash S. *A co-relational study of lingualism in Imphal Town.* Manipur.

2. Madhuri Devi, K. *Khwairakpam Chaobagi Warengda mityeng amsaung khuti.* Manipur.

3. Medhabati Devi, N. *Realism in Manipuri short story,. 1933-1985.* Manipur.

4. Singh, Ibohanbi. *Imagery in early Manipuri poetry* Manipur.

5. Singh, Ng. Kerani. *Tongbragi Lilada lousing Amsaung Phagi.* Manipur.

6. Singh, S. Kumar. *Folklore in Kwatha Village.* Manipur

7. Singh, S. Rajnit. *A comparative study of Manipuri and Hindi morphology.* Manipur.

Malayalam

1. Mini, T. *Contribution of Kuttikrishna Merar to Malayalam literary criticism.* Kerala. Dr. N. Sam.

2. Mable, J. *Rugnengads charithem kilippattu critica edition and study.* Kerala. Dr. N. Sam.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

sychology

1. Batra, Amrit Bala. *A study of perceptual judgement in elation to intelligence, anxiety and academic achievement of dolescent students.* Durgawati. Dr. R. P. Shrivastava, Prof., Govt. College of Education, Psychology and Guidance, abalpur.

2. Sudershan Kumari. *Problem solving as a function of xtraversion, intelligence and induced stress.* HP.

Sociology

1. Draxe, Prabhakar Bharamu. *The dange dhanoars of Kolhapur District : A sociological study.* Shivaji. Dr. M.J. Kashalikar, Head, Department of Sociology, Devchand College, Arjunnagar, Kolhapur.

2. Mishra, Ravinder Nath. *Grameen samajik sanrachana mein gut sangarsh : U.P. ke Varanasi Janpad ke teen gaon per adharit ek samajshastriya adhyayan.* Avadh. Dr. Rambali Mishra, Lecturer, Department of Sociology, B.N.K. B.P.G. College. Akbarpur, Faizabad.

3. Pandey, Vijendra Kumar. *Social mobility among women in the transitional city of Raipur in Madhya Pradesh.* Utkal.

4. Tripathi, Yogender Prasad. *Bhartiya gaon mein adhnuniki karan : Poorvi U.P. ke char gaon per adharit ek samajshastriya adhyayan.* Avadh. Dr. Chander Shekhar Mishra, Lecturer, Department of Sociology, B.N.K. B.P.G. College, Akbarpur. Faizabad.

Political Science

1. Bawri, Sulochana. *Electoral politics in Meghalaya : A case study of the Greater Shillong Areas during the 1983 Assembly election.* NEHU. Dr. B. Pakem, Department of Political Science, North Eastern Hill University, Shillong.

2. Chaudhuri, Kamini Misra. *Politics behind purges and the gang of four, 1969-78.* JNU. Prof. (Mrs) Gargi Dutt. Centre for East Asian Studies, Jawaharlal Nehru University, New Delhi.

3. Dubey. Raj Bahadur. *Uttar Pradesh Vidhan Sabha adhyaksha ka adhyayan.* Avadh. Dr. Mithila Pandey, Lecturer, Department of Political Science, R.R. College, Amethi, Sultanpur.

4. Gargava, Manjushri, *M.P. mein sehkari bhoomi vikas bankon ka sangthan tatha prashasan.* Bhopal. Dr. O.P. Chaturvedi, Prempura, P. Box No. 332, Central T.T. Nagar, Post Office, Bhopal.

5. Mishra, Shishir Kumar. *Political and legislative behaviour of deprived people : A study of the scheduled caste and scheduled tribe M.L.As of Orissa, 1967-1977.* Sambalpur. Dr. S. Nanda. Prof., Department of Political Science, Sambalpur University, Burla.

6. Shukla, Sona. *1977 se 1984 tak ke Bharatiya Lok Sabha aam chunavon mein matdata ka vyavhar: Madhya Pradesh ke Sagar Jile ke vishesh sandarbh mein.* HS Gour. Dr. R.P. Gautam, Department of Political Science and Public Administration, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

7. Srivastava, Kirti. *Bhartiya rajniti vyavastha ka sarvodayee vikalp.* Avadh. Dr. R. Kushwaha, Lecturer, Department of Political Science, M.L.K. College, Balrampur.

8. Sultan Omer. *Modernization and ethnicity : A study of Telangana Muslims.* Osmania.

9. Verma, Madan Mohan. *Gandhi's technique of mass mobilization.* Jamia. Dr. Zafar Ahmad Nizami, Reader, Department of Political Science, Jamia Millia Islamia, New Delhi.

Economics

1. Gupta, Sangeeta. *Financial appraisal of wagon and engineering companies in India.* Rajasthan. Prof. M. C. Khandelwal, Department of Accountancy and Business Statistics, University of Rajasthan, Jaipur.

2. Inderjeet Kaur. *Sehkari sakh evam Damoh Jile ka krishi vikas.* HS Gour. Dr. B.K. Jain, Department of Commerce, Dr. Harisingh Gaur Vishwavidyalaya, Sagar.

3. Phogat, Mahender Singh. *Periodic markets and intra urban mobility : A case study of Bhopal City.* Bhopal. Dr. A. C. Minocha, Dean, Social Sciences, Bhopal University, Bhopal and Dr. H S. Yadav, Reader, R.P.E G., Bhopal University, Bhopal.

4. Sinha, Kamini. *An economic study of the working of land mortgage banks in financing Indian agriculture with special reference to Bihar from 1956-85.* Magadh.

5. Tiwari, Lalit Shankar. *Origin and growth of socio-economic life in Ancient Rajasthan upto 1000 A.D.* Rajasthan. Prof. J.M. Joshi, Department of Economics, University of Rajasthan, Jaipur and Dr. G.N. Sharma, 66 Bhattayani Chohttee, Udaipur.

Law

1. Aparajit, Jayant Laxmikant. *Concept of equality and compensatory discrimination under the Constitution of India.* Nagpur, Dr. A. Laxminath, Faculty of Law, Nagpur University, Nagpur.

2. Krishna, P.M. *Legal regulations of Government companies : Perspectives and policies.* Osmania.

3. Nakade, Shivraj Bashettiappa. *National emergency under the Indian Constitution.* Marathwada. Prof. J.K. Mittal, Research Prof., Indian Law Institute, Bhagwandas Road, New Delhi.

Military Studies

1. Pandey, A. K. *Bharat ke purbi simant kee suraksha samasya.* Avadh. Dr. B.S. Singh, Department of Military Science, P.B. College, Pratapgarh.

2. Srivastava, B.K. *Bharat kee madhya-kaleen suraksha mein topkhanen ka yogdan : Mughal kaleem Topkhanen ke sandarbh poorvak.* Avadh. Dr. O.P. Srivastava, Head, Department of Military Science, K.S. Saket P.G. College, Faizabad.

Education

1. Agrawal, Shashi S. *A critical study of effects of revaluation on the results of candidates appearing at university examinations in Maharashtra.* Nagpur. Dr. G.S. Parasher, Department of Education, Nagpur University, Nagpur.

2. Badri Vishal. *A study of curriculum load at 10+2 stage in U.P. with special reference to science subject.* Avadh. Dr. B.P. Singh, Department of Education, K. N. I. College, Sultanpur.

3. Pandey, Bal Krishna. *A study of the finances of the Avadh University.* Avadh. Dr. S.L. Chopra, Head, Department of Education, Lucknow University, Lucknow.

4. Ranganathan, Namita. *Stress among school children.* JNU. Dr. (Mrs) V. Veeraraghavan, Zakir Husain Centre for Educational Studies, Jawaharlal Nehru University, New Delhi.

5. Shukla, Shobh Nath. *A study of frustration in relation to professional adjustment and teaching efficiency among different grade teachers.* Avadh. Dr. B.P. Singh, Head, Department of Education, K.N.I. College, Sultanpur.

Commerce

1. Baitule, Jagdish Sadashivrao. *Nagpur Jilehateel sehkari krishi patsanstha ani Nagpur Jile sehkari adhikosh yanchya karjbaki madhil jantra ani tyamule nirman hona ya astulnachya samasyancha abhyas, kalkhand 1972 te 1980.* Nagpur. Dr. V. S. Shenwai, Department of Business Management and Economics, S.P. City College, Nagpur.

2. Ghosh, Gorachand. *The hidden economy in India.* Calcutta.

3. Singh, Girija Nandan Pd. *Social security measures of industrial workers in India : A critical appraisal of their application in the coal mines.* Magadh.

Home Science

1. Jhamb, Rekha. *A comparative study of house hold storage methods of vegetables with reference to time, money colour, texture, taste and estimation of Vitamin C.* Nagpur, Dr. (Mrs) Asha Patwardhan, Department of Home Science, Nagpur University, Nagpur.

2. Rao, Suhasini. *Physiological costs and perceived exertion for home and farm activities done by rural women.* SNDT. Dr. (Smt) M.A. Varghese.

Business Management

1. Sharma, Pradeep Kumar. *Export marketing problems : A case study of problems and potentials of Indian readymade garment industries.* Rajasthan. Dr. K.K. Sharma, Department of Business Administration, University of Rajasthan, Jaipur.

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(Prof.) S. Bhatnaga
DIRECTOR

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
September 26-28, 1988	**International Conference on Welding Technology in Developing Countries**	**To provide an opportunity to scientists and technologists from developing and advanced countries to share their experiences in the area of Welding Technology.**	**University of Roorkee, Roorkee.**	**Prof. P.C. Gupta, Organising Secretary, International Conference on Welding Technology in Developing Countries, Department of Mech. & Ind. Engg., University of Roorkee, Roorkee-247667**
October 27-29, 1988	National Seminar on Statistics in Medicine, Health and Nutrition.	To discuss Data-Base and Analysis in Health and Nutrition—Present and Future.	Department of Statistics, National Institute of Nutrition, Hyderabad.	Dr. K. Visweswara Rao, Organising Secretary, National Seminar on Statistics in Medicine, Health and Nutrition, Department of Statistics, National Institute of Nutrition, Indian Council of Medical Research, Jamia Osmania, Hyderabad-500 007
Oct. 31-Nov. 4 1988	Short Term Course on Remote Sensing and Geo-Data Base with Socio Economic Information	To expose the concept of Data Base Approach towards handling and analysing the Remotely Sensed and Land-based Information.	Centre of Studies in Resources Engineering, IIT, Bombay.	Dr. T.V. Pavate Chief Project Engineer, Training Extension and Project Cell, RSD-VI, CSRE, IIT, Bombay-400076
December 13-17, 1988	**International Seminar on Education and Training in Water Resources in Developing countries.**	**To assess the requirements of manpower, education and training in Water Resources Sector upto the year 2025 in the developing countries.**	**Central Board of Irrigation and Power, New Delhi.**	**Mr. C.V.J. Varma, Organising Secretary, International Seminar on Education and Training, Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi-110021**
Dec. 15-17, 1988	National Conference on Fluid Mechanics and Fluid Power	To provide a forum for exchange of information on topics in fluid mechanics and design, research and development activities in areas like power generation, aerodynamics, fluidics, biomechanics, etc.	Harcourt Butler Technological Institute, Kanpur.	Dr. N.L. Kachhara, Organising Secretary, 16th National Conference on Fluid Mechanics and Fluid Power, Mechanical Engineering Department, Harcourt Butler Technological Institute, Kanpur-208002

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Qualifications Essential : (i) Doctorate in Polymer, Organic, Applied or Physical Chemistry or Zoology and/or Entomology. (ii) and (iii) as in Item No. 1 above.

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Qualifications Essential : (i) Doctorate in Vety. Virology/Vety. Immunology/Vety. Pathology/Vety Bacteriology. (ii) At least 12 years' research/disease diagnosis/teaching experience at post graduate level of which 7 years' experience should be at least at S-3 level or equivalent pay including at least 3 years' as Head of Division/Research Project Coordinator/Head of the Deptt. or an equivalent post in a University in the Professor's scale. (The Experience in research/disease diagnosis/teaching is to be reckoned from the date the candidate has completed his Master's degree and will include the period, not exceeding 3 years, spent to obtain Doctorate degree). (iii) A record of productive research in Animal Health as evidenced by published work.

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INDIAN COUNCIL OF AGRICULTURAL RESEARCH, NEW DELHI

5. Assistant Director General (Plan Implementation and Monitoring) S-4 (One post) Rs. 1800-2250 (Pre-revised) Age : Below 50 years. (Higher pay scale may be recommended by the ASRB for specially qualified & experienced candidates).

Qualifications Essential : (i) Doctorate in any branch of Agricultural Sciences. (ii) At least 10 years' research/teaching experience at post-graduate level of which at least 5 years experience should be at S-3 level or equivalent pay (the experience in research/training is to be reckoned from the date the candidate has completed his Master's degree and will include the period, not exceeding 3 years, spent to obtain Doctorate degree). (iii) Managerial experience of at least 3 years as Head of the Divn./Research Project Coordinator/Head of Regional Station/Joint Director/Research Project Leader in S-3 level or Head of Deptt. in a University in the grade of Professor/Associate Professor.

6. Assistant Director General (Inland Fisheries) S-4 : (One post) Rs. 1800-2250 (Pre-revised) Age : Below 50 years. (Higher scale of pay may be recommended by ASRB for specially qualified and experienced candidates).

Qualifications Essential : (i) Doctorate degree in Fish and Fisheries Science/Mariculture/Fishery Technology/Zoology with specialisation in Fisheries or in allied subject. (ii) and (iii) as in Item No. 5 above.

7. Assistant Director General (Marine Fisheries) : (One post) Rs. 1800-2250 (Pre-revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Fish and Fishery Science/Mariculture/Fishery Technology/Zoology with specialisation in Fisheries or in allied subject. (ii) and (iii) as in Item No. 5 above.

8. Assistant Director General (Agronomy) S-4 : (One post) Rs. 1800-2250 (Pre-revised) Age : Below 50 years. (Higher scale of pay may be recommended by the ASRB for specially qualified and experienced candidates).

Qualifications Essential : (i) Doctorate degree in Agronomy. (ii) At least 10 years, research/teaching experience in Agronomy at post-graduate level, of which at least 5 years' experience should be at S-3 level or equivalent pay (the experience in research/training is to be reckoned from the date the candidate has completed his Master's degree and will include the period, not exceeding 3 years, spent to obtain Doctorate degree. (iii) As in Item No. 5 above.

9. Assistant Director General (Engineering) S-4 : (One post) Rs. 1800-2250 (Pre-revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Agricultural Engineering with specialisation in Farm Machinery and Power. (ii) And (iii) As in Item No. 5 above.

10. Editor (English) T-7 : (One post) Rs. 3000-4500 (Revised) Age : Below 45 years.

Qualifications Essential : (i) Master's degree of a recognised University in Agiculture/Veterinary Science or subjects basic to them with 3 years' experience in the line. This is relaxable to Bachelor's degree of a recognised University in the subject relevant to the job requirement provided that the candidate has at least 7 years' experience of Science writing and Science Journalism in the concerned language as evident through his publications.

11. Assistant Editor (English) T-6 (One post) Rs. 2200-4000 Revised) Age : Below 35 years. Reserved for S.C. Candidate.

Qualifications Essential : (i) Master's degree of a recognised University in Science preferably in Agriculture or Animal Sciences with 3 years' experience in the line. This is relaxable to Bachelor's degree of a recognised University in the subject relevant to the job requirement provided that the candidate has at least 7 years' experience of Science writing and Science Journalism in the concerned language as evident through his publications.

NATIONAL RESEARCH CENTRE ON COLD-WATER FISHERIES, CHAMPAVAT, BHIMTAL

12. Project Director S-4 (One post) Rs. 1800-2250 (Pre-revised) Age : Below 50 years.

Qualifications Essential: (i) Doctorate in Zoology/Fish & Fisheries and Fish Physiology. (ii) and (iii) as in item No. 5 above.

INDIAN AGRICULTURAL STATISTICS RESEARCH INSTITUTE, NEW DELHI

13. Joint Director S-4 (One post) Rs. 1800-2250 (Pre-revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Agricultural Statistics/Statistics. (ii) Atleast 10 years' research/teaching experience in Agricultural Statistics at post-graduate level, of which at least 5 years' experience should be at S-3 level or equivalent pay (the experience in research/training is to be reckoned from the date the candidate has completed his Master's degree and will include the period, not exceeding 3 years, spent to obtain Doctorate degree). (iii) As in Item No. 5 above.

CENTRAL SOIL SALINITY RESEARCH INSTT, KARNAL (FOR REGIONAL STATION IN GUJARAT).

14. Joint Director S-4 (One post) Rs. 1800-2250 (Pre-revised) Age: Below 50 years. (Higher pay scale may be recommended by the ASRB for specially qualified and experienced candidates).

Qualifications Essential : (i), (ii) and (iii) as in Item No. 5 above.

NATIONAL RESEARCH CENTRE FOR CASHEW, PUTTUR.

15. Director S-4 (One post) Rs. 1800-2250 (Pre-revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Horticulture/Agricultural Sciences. (ii) At least 10 years' research/teaching experience in Horticulture or Plantation Crops at post-graduate level, of which at least 5 years' experience should be at S-3 level or equivalent pay (the experience in research/training is to be reckoned from the date the candidate has completed his Master's degree and will include the period, not exceeding 3 years, spent to obtain Doctorate Degree). (iii) As in Item No. 5 above.

NATIONAL CENTRE FOR INTEGRATED PEST MANAGEMENT, FARIDABAD.

16. Director S-4 (One post) Rs. 1800-2250 (Pre-revised) Age : Below 50 years. (Higher pay scale may be recommended to specially qualified and experienced candidates).

Qualifications Essential : (i) Doctorate in Entomology/Plant Pathology. (ii) At least 10 years' research/teaching experience in Agricultural Entomology/

pplied Plant Pathology at post-graduate level, of hich at least 5 years' experience should be at S-3 evel or equivalent pay (the experience in research/ raining is to be reckoned from the date the candilate has completed his Master's degree and will inlude the period, not exceeding 3 years, spent to btain Doctorate degree). (iii) As in Item No. 5 bove.

NDIAN AGRICULTURAL RESEARCH INSTITUTE, NEW DELHI.

17. Scientist S-3 (Microbiology) (Blue Green Algal Physiology) (One post) Rs. 1500-2000 (Pre-revised). Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Botany/ Microbiology (relaxable to Master's degree or an equivalent qualification in the case of candidates with xceptionally distinguished record of productive research and responsible leadership in the relevant field (ii) At least 7 years' experience in research/ teaching at least at Bachelor's degree level for candidates possessing a Doctorate degree (excluding the period spent for obtaining the Doctorate degree) and 10 years' for those having Master's degree or equivalent qualifications. Out of the 7/10 years, at least 2 years' experience should be at S-2 or equivalent pay level.

18. Scientist S-3 (Microbiology) (Blue Green Algal Genetics) (One post) Rs. 1500-2000 (Pre revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Botany Microbiology (relaxable to Master's degree or equivalent qualifications in the case of candidates with exceptionally distinguished record of productive research and responsible leadership in the relevant field). (ii) As in Item No. 17 above.

19. Scientist S-3 (Microbiology) (Blue Green Algal Taxomy) (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years. Reserved for S.C. candidate.

Qualifications Essential : (i) Doctorate in Botany/ Microbiology (relaxable to Master's degree or an equivalent qualification in the case of candidates with exceptionally distinguished record of productive research and responsible leadership in the relevant field). (ii) As in Item No. 17 above.

20. Library/Information/Documentation Staff, T-8 Head Library Servicesˈ (One post) Rs. 1300-1700 (Pre-revised) Age : Below 50 years : Reserved for S.C. Candidate.

Qualifications Essential : (i) Bachelor's degree of a recognised University with Master's degree (M. Lib) in Library/Information Science (OR) Any equivalent degree certificate conferred by any Organisation which are approved by the Ministry of Education. Government of India like INSDOC and DRTC.

OR

Master's degree of a recognised University with Diploma or degree (B. Lib) in Library/Information Science or any equivalent certificate if conferred by any Organisation which are approved by the Ministry of Education, Govt. of India. (ii) Five years' experience for Diploma Holders.

21. Technical Officer T-7 (Radiological Safety) (One post) Rs. 3000-4500 (Revised) Age : Below 45 years. Reserved for S.C. Candidate.

Qualifications Essential : (i) Three years' Diploma in Radiology/Bachelor's degree in Radiology/Science with Physics and Chemistry. (ii) Five years' experience in Radiological Safety and handling of nuclear equipments such as GM Counter, Gama Cell Scientillation Counter.

CENTRAL PLANTATION CROPS RESEARCH INSTITUTE, KASARAGOD.

22. Scientist S-3 (Joint Director) (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years. (For ICAR Res. Complex for CPCRI, GOA).

Qualifications Essential : (i) Doctorate in any branch of Agril Science/Hort. (relaxable to Master's degree or an equivalent qualification in case of candidates with exceptionally distinguished record of productive research and responsible leadership in the relevant field. (ii) As in Item No. 17 above.

INDIAN GRASSLAND & FODDER RESEARCH INSTITUTE, JHANSI

23. Scientist S-3 (Agril. Extension) (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years. Reserved for S.C. Candidate.

Qualifications Essential : (i) Doctorate in Agril. Extension (relaxable to Master's degree or an equivalent qualification in the case of candidates with exceptionally distinguished record of productive research and responsible leadership in the relevant field), (ii) As in Item No. 17 above.

24. Scientist S-3 (Agricultural Economics) (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Agril. Economics/Economics (relaxable to Master's degree or an equivalent qualification in the case of candidates with exceptionally distinguished record of productive research and responsible leadership in the relevant field). (ii) As in Item No. 17 above.

25. Scientist S-3 (Farm Machinery & Power) (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Agril.

Engineering with special reference to Farm Machinery & Power (relaxable to Master's degree in case of candidates with exceptionally distinguished record of productive research). (ii) At least 5 years' experience of research/teaching (excluding the period spent for obtaining the Doctorate degree) for candidates possessing the Doctorate degree and 8 years' for those having a Master's degree or an equivalent qualification. Experience will count after the attainment of entry qualifications to ARS.

NATIONAL ACADEMY OF AGRICULTURAL RESEARCH MANAGEMENT, HYDERABAD.

26. Scientist S-3 (Social Science-Organisational Psychology) (One post) Rs. 1500-2000) (Pre-revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in any branch of Social Science with specialisation in Organisational Psychology (relaxable to Master's degree or an equivalent qualification in case of candidates with exceptionally distinguished record of productive research and responsible leadership in the relevant field). (ii) As in Item No. 17 above.

DIRECTORATE OF OILSEEDS RESEARCH, HYDERABAD

27. Scientist S-3 (Plant Breeding & Project Coordinator) (Sunflower) (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years. (For U.A.S. Bangalore).

Qualifications Essential : (i) Doctorate in Plant Breeding (relaxable to Master's degree or an equivalent qualification in case of candidates with exceptionally distinguished record of productive research and responsible leadership in the relevant field). (ii) As in Item No. 17 above.

CENTRAL INSTITUTE OF AGRIL. ENGINEERING, BHOPAL

28. Scientist S-3 (Farm Machinery & Power) (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years Reserved for S.T. Candidate. (Under the Project on R.E.S. for Agriculture and Agro based Industries to work as Principal Investigator (Wind Energy).

Qualifications Essential : (i) Doctorate in Agricultural/Mechanical Engineering with specialisation in Farm Machinery and Power (relaxable to Master's degree in case of candidates with distinguished record of productive research). (ii) As in Item No. 25 above.

INDIAN LAC RESEARCH INSTITUTE, RANCHI

29. Scientist S-3 (Chemical Engineering) (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Chemical Engineering (relaxable to Master's degree in case of candidates with distinguished record of productive research) (ii) As in Item No. 25 above.

30. Scientist S-3 (Technology Transfer (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years. Reserved for S.C. Candidate.

Qualifications Essential : (i) Doctorate in Extension Education/Chemical Tech./Applied Chemistry (relaxable to Master's degree or an equivalent qualification in the above discipline in case of candidates with distinguished record of productive research and responsible leadership in the relevant field). (ii) Other than Technology & Engineering Group : At least 7 years' experience of transfer Technology/Research/Teaching at least at Bachelor's degree level for candidates, possessing a Doctorate Degree (excluding the period spent for obtaining the Doctorate degree and 10 years' for those having Master's degree or equivalent qualifications. Out of 7/10 years, at least 2 years' experience should be at Scientist S-2 or equivalent pay level. (iii) Technology & Engg. Group : at least 5 years' experience of research/teaching (excluding the period spent for obtaining the Doctorate Degree) for candidates possessing a Doctorate degree and 8 years' for those having a Master's degree or an equivalent qualifications. Experience will count after the attainment of entry qualifications to ARS.

CENTRAL AGRICULTURAL RESEARCH INSTITUTE, PORT BLAIR.

31. Scientist S-3 (Plant Breeding) (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Plant Breeding (relaxable to Master's degree or an equivalent qualification in the case of candidates with exceptionally distinguished record of productive research and responsible leadership in the relevant field) (ii) As in Item No. 17 above.

NATIONAL RESEARCH CENTRE FOR SOYABEAN, INDORE.

32. Scientist S-3 (Plant Breeding) : (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Botany/Agricultural Botany with specialisation in Genetics/Plant Breeding (relaxable to Master's degree or an equivalent qualification in the case of candidates with exceptionally distinguished record of productive research and responsible leadership in the relevant field). (ii) As in Item No. 17 above.

33. Scientist S-2 (Plant Pathology) : (One post) Rs. 1100-1600 (Pre-revised) Age : Below 45 years.

Reserved for S.C. Candidate.

Qualifications Essential : (i) Doctorate in Plant Pathology/Botany or Agricultural Botany or Economic Botany with specialisation in Plant Pathology (relaxable to Master's degree or an equivalent qualification in case of candidates with exceptionally distinguished record of productive research). (ii) At least 5 years' research/teaching experience at least at Bachelor's degree level for candidates possessing a Doctorate degree (excluding the period spent for obtaining the Doctorate degree) and 8 years' for those having Master's degree or an equivalent qualification.

34. Scientist S-2 (Plant Breeding) : (One post) Rs. 1100-1600 (Pre-revised) Age : Below 45 years.

Qualifications Essential : (i) Doctorate in Plant Breeding (Relaxable to Master's degree or an equivalent qualification in case of candidates with exceptionally distinguished record of productive research). (ii) As in Item No. 33 above.

35. **Scientist S-2 (Agronomy)** (One post) Rs. 1100-1600 (Pre-revised) Age : Below 45 years.

Qualifications Essential : (i) Doctorate degree in Agronomy (relaxable to Master's degree or an equivalent qualification in case of candidates with exceptionally distinguished record of productive research). (ii) As in Item No. 33 above.

NATIONAL CENTRE FOR MUSHROOM RESEARCH AND TRAINING, SOLAN

36. Scientist S-3 (Plant Pathology) : (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years. Reserved for S.T. Candidate.

Qualifications Essential : (i) Doctorate in Plant Pathology/Mycology (relaxable to Master's degree or an equivalent qualification in the case of candidates with exceptionally distinguished record of productive research and responsible leadership in the relevant field). (ii) As in Item No. 17 above.

DIRECTORATE OF RICE RESEARCH, RAJENDER NAGAR, HYDERABAD

37. Communication Specialist T-7 : (One post) Rs. 1100-1600 (Pre-revised) Age : Below 45 years.

Qualifications Essential : (i) Master's degree of a recognised University in Agricultural Extension/Communication. (ii) At least 7 years' experience in extension work and training/research/teaching in the relevant field.

JUTE TECHNOLOGICAL RESEARCH LABORATORIES, CALCUTTA

38. Scientist S-3 (Textile Manufacture) : (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Textile Manufacture/Textile Technology/Fibre Technology/Jute Technology (relaxable to Master's degree in the case of candidates with distinguished record of productive research). (ii) As in Item No. 25 above.

39. Scientist S-3 (Mechanical Engineering) : (One post) Rs. 1500-2000 (Pre-revised) Age: Below 50 years. Reserved for S.C. Candidate.

Qualifications Essential : (i) Doctorate in Mechanical Engineering with specialisation in design of machines (relaxable to Master's degree in the case of candidates with distinguished record of productive research). (ii) As in Item No. 25 above.

INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR

40. Scientist S-3 (Agricultural Extn.) : (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years.

Qualifications Essential : (i) Doctorate in Veterinary Science/Animal Science/Dairy Science with specialisation in Extn. Education/long experience in Extn. Education.

OR

Doctorate in Agricultural Extension with specialisation in Veterinary Science/Animal Science/Dairy Science (relaxable to Master's degree or an equivalent qualification in case of candidates with exceptionally distinguished record of productive research and responsible leadership in the relevant field). (ii) At least 7 years' experience of training/extension/teaching at least at Bachelor's degree level for candidates possessing a Doctorate degree (excluding the period spent for obtaining the Doctorate degree) and 10 years' for those having a Master's degree or an equivalent qualification. Out of 7/10 years, at least 2 years' experience should be at S-2 or equivalent pay level.

NATIONAL RESEARCH CENTRE ON COLDWATER FISHERIES, ALLAHABAD (UP)

41. Scientist S-3 (Fish and Fishery Science) : (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years. Reserved for S.C. (For Haldwani Distt., Nainital, UP).

Qualifications Essential : (i) Doctorate in Zoology/Fishery Biology (relaxable to Master's Degree or an equivalent qualification in case of candidates with exceptionally distinguished record of productive research and responsible leadership of productive research in coldwater fisheries). (ii) As in Item No. 17 above.

CENTRAL INSTITUTE OF FRESHWATER AQUACULTURE, BHUBANESHWAR

42. Scientist S-3 (Animal Physiology) : (One post) Rs. 1500-2000 (Pre-revised) Age : Below 50 years. Reserved for S.T. Candidate. (For Kalyani West Bengal).

Qualifications Essential : (i) Doctorate degree in Animal Physiology/Biochemistry (relaxable to Master's degree or an equivalent qualification in the case of candidates with exceptionally distinguished record of productive research and responsible leadership in the relevant field). (ii) As in Item No. 17 above.

43. **Scientist S-2 (Animal Physiology)** : (One post) Rs. 1100-1600 (Pre-revised) Age : Below 45 years. Reserved for S.C. Candidate.

Qualifications Essential : (i) Doctorate in Animal/Frog/Fish Physiology (relaxable to Master's degree or an equivalent qualification in case of candidates with exceptionally distinguished record of productive research). (ii) As in Item No. 33 above.

CENTRAL SHEEP & WOOL RES. INSTITUTE, AVIKANAGAR VIA JAIPUR (RAJ)

44. Sr. Vety. Officer T-7 (One post) Rs. 1100-1600 (Pre-revised) Age : Below 45 years.

Qualifications Essential : (i) Bachelor's degree in Veterinary & Animal Sciences. (ii) 7 years' experience of working as a field Veterinarian/Vety. Officer in a large livestock farm.

CENTRAL INSTITUTE OF FISHERIES EDUCATION, BOMBAY.

45. Engineer T-7 (One post) Rs. 1100-1600 (Pre-revised) Age : Below 45 years. Reserved for S.T. Candidate.

Qualifications Essential : (i) Three years' Diploma/Bachelor's degree in relevant field (Mechanical Engineering). (ii) At least 5 years' experience. In the fields where the duration of Diploma Courses available in the country is only two years, the minimum qualifications will be two years' Diploma instead of three years' Diploma.

46. Engineer T-7 (Fishing & Trg. Vessel (One post) Rs. 1100-1600 (Pre-revised) Age : Below 45 years.

Qualifications Essential : (i) Matriculation from a recognised School/Board/University or equivalent, (ii) Certificate of compentency of MOT 1st Class or 2nd Class Engineer (Motor). (iii) 5 years' practical experience on board fishing vessel.

Note I : Qualifications are relaxable at the discretion of ASRB in case of candidates otherwise well qualified.

Note II : The qualifications regarding experience is/are relaxable at the discretion of the ASRB in case of candidates belonging to SC/ST if, at any stage of selection, the ASRB is of the opinion that sufficient number of candidates possessing the requisite experience are not likely to be available to fill up vacancies reserved for them.

NATIONAL RESEARCH CENTRE ON EQUINES, HISSAR (HARYANA)

47. Farm Manager T-9 (Livestock) (One post) Rs. 3700-5000 (Revised) Age : Below 50 years.

Qualifications Essential : (i) 3 years' Diploma/Bachelor's degree in Veterinary Sciences and Animal Husbandry/Animal Sciences. (ii) 12 years' experience of working after holding Bachelor's degree, preferably handling of horses.

CENTRAL INSTITUTE OF FISHERIES TECHNOLOGY, WILLINGDON ISLAND, MATSYAPURI, P.O., COCHIN.

48. Technician T-7 (Skipper) (One post) Rs. 1100-1600 (Pre-revised) Age : Below 45 years. Reserved for S.T. Candiates.

Qualifications Essential : (i) Certificate of compentency as Skipper for the Fishing Vessels issued by the Mercantile Marine Department. (ii) Secondary School Leaving Certificate or equivalent. (iii) 5 years' practical experience on Fishing Vessels.

CLOSING DATE FOR RECEIPT OF APPLICATIONS IN AGRICULTURAL SCIENTISTS RECRUITMENT BOARD OFFICE IS 22.8.1988.

For candidates abroad and in the Andaman and Nicobar Islands, Lakshadweep, Minicoy and Amindivi Islands, State/Union Territories in the North Eastern Region, Ladakh Division of J & K State/Sikkim/Pungi Sub-division of Chamba, Lahul and Spiti districts of Himachal Pradesh, last date will be 5.9.1988.

GENERAL INSTRUCTIONS

1. For application forms, please write to th Secretary, **Agricultural Scientists Recruitmen Board, Krishi Anusandhan Bhawan, Pusa, New Delhi-110012.** Request for forms mus specify Advt. No. 3/88, name of the post an Item number and should be accompanied b a self-addressed unstamped envelope (23x1 cms. size).
2. Separate application with separate fee is required for each post.
3. Application forms complete in all respects should reach office of the ASRB together with the application fee of Rs. 8/- (No fee for SC/ST candidates) in the form of Crossed Indian Postal Order drawn in favour of the Secretary, Indian Council of Agricultural Research by the closing date. Applications received after the closing date will not be entertained. In case a candidate anticipates delay in forwarding of his application through Proper Channel, he must send an advance copy of the Application alongwith the fee which must reach this Office on or before the closing date.
4. Candidates abroad may apply on plain paper and send their applications together with an International Postal Order/Bank Draft covering the application fee drawn in favour of the Secretary, Indian Council of Agricultural Research, so as to reach the office of the ASRB by the closing date. In countries where regular commercial channels, are not available the candidates can deposit the application fee in local currency with the Indian Missions/Posts abroad who in turn will issue on R.B.I. Draft in favour of Secretary, ICAR, New Delhi.
5. **Only the candidates belonging to SC/ST would be considered against the respective reserved posts. As such General candidates NEED NOT APPLY against the reserved posts.**
6. Crucial date for determining the age limit of candidates for each post will be the closing date for receipt of applications from candidates in India. There will be no maximum age limit for ICAR Employees. Relaxation in age is allowed to SC/ST persons to the extent permissible under the rules.
7. The prescribed Essential Qualifications are minimum and possessing of the same does not entitle candidates to be called for interview. Where the number of applicants is large, the Board may restrict the number of candidates for Interview to a reasonable limit on the basis of qualifications and experience higher than the minimum prescribed in the Advt.
8. T.A. Contribution will be admissible for those called for Interview as per ICAR Rules.
9. If required, candidates must appear for personal interview.
10. Higher initial pay may be recommended by the ASRB for specially qualified and experienced candidates for all the posts.

davp 88/20

CLASSIFIED ADVERTISEMENTS

UTKAL UNIVERSITY

VANI VIHAR, BHUBANESWAR-4

No. Advt. Estt. II/718/A/9728/88

Dated : 30.6.88

Applications in five copies are invited in the prescribed form alongwith attested copies of certificates and marksheets of all examinations passed for the post of Technician for the Electron Microscope in the P. G. Deptt. of Botany, Utkal University in the scale of pay of Rs. 1350-55-1755-EB-60-2095-70-2375-EB-75-2975 so as to reach the undersigned on or before the **30th July, 1988.** The application forms can be obtained from the University Information Counter on production of a crossed Bank Draft in the State Bank of India, Utkal University Campus Branch, payable to the Finance Officer, Utkal University, Vani Vihar, Bhubaneswar-4 worth Rs. 30/- (Rupees Thirty) only in person or by post on receipt of a crossed Indian Postal Order for Rs. 30/- (Rupees Thirty) only payable to the Finance Officer, Utkal University, Vani Vihar, Bhubaneswar-4 along with a self-addressed envelope (23 cm×10 cm) superscribed thereon with the words "Application form for the post of Technician for the Electron Microscope".

Qualification and Experience

(a) Post-Graduate Degree in Physics or Computer Science or Electronics.
(b) Minimum 3 (Three) years working experience in Electronic Microscope.

Age Limit

Candidates must not be below 21 years' and above 28 years of age as on 30.7.88.

1. The incumbent shall be entitled to all types of allowances to which other University employees are entitled.
2. The University reserves the right not to fill-up the post, if decided.
3. No application shall be entertained after the last date is over.
4. The University may call for interview only a limited number of candidates.
5. No T.A./D.A. shall be paid for attending the interview.
6. Candidates already in service should apply through proper channel but they should submit 4 (four) advance copies of the application in the University within the prescribed date.

REGISTRAR

BANARAS HINDU UNIVERSITY

CORRIGENDUM TO
Advt. No. 1/BKB/87-88

1. Out of the posts of KEEPERS (Two), Dy. KEEPERS (Two) and ASSISTANT CHEMIST (One) advertised in the month of March, 1988 in the Bharat Kala Bhawan, one post EACH is reserved for qualified S.C./S.T. Candidates against the posts of KEEPERS and DEPUTY KEEPERS.
2. The retirement age is 58 years unless otherwise revised instead of 60 years.
3. The last date for receipt of applications on the prescribed forms for these posts has been extended upto **31st August, 1988.**

Candidates desirous to apply may request the Registrar (Selection Committee Section) Banaras Hindu University, Varanasi-221005 for the application forms and other details by sending a crossed I.P.O /Bank Draft of Rs. 2/- in favour of the Registrar, B. H.U. and self-addressed envelope of 23 cm × 10 cm size carrying stamps of Rs. 1.80. Those who have already applied timely need not apply again.

REGIONAL ENGINEERING COLLEGE

ROURKELA-769008 (ORISSA)

Advt. No. 2/88 **Dated : 6-7-1988**

Applications in the prescribed form are invited for the following posts :

1. Assistant Professor : Scale : Rs. 1200-50-1300-60-1900 (Plus allowances).

Metallurgical Engineering : Physical Metallurgy / Mechanical Metallurgy, and as addendum to Advertisement No. 1/88 dated 30-6-88 Ferrous Process Metallurgy/Corrosion.

Qualifications and Experience : As in Advertisement 1/88.

2. Lady Senior Research Fellow : (Under the School of Entrepreneurship Development and Management Sciences).

Purely Temporary under Plan Scheme, likely to continue.

Scale : Rs. 550-25-750-EB-30-900 plus allowances (likely to be revised).

Qualifications and Experience : Master's Degree in Economics/Commerce / Computer Application or, Degree in Engineering/Management. Knowledge in the field of Entrepreneurship is desirable.

Further details regarding qualifications, experiences, specialisations, Service conditions etc. and application form will be available from the undersigned on payment of Rs. 15/- in shape of crossed Bank Draft payable to "Principal, Regional Engineering College, Rourkela-769008" at the State Bank of India, R.E. College Campus Branch enclosing a self-addressed envelope 23 cm x 10 cm in size with postage stamp worth Rs. 1.80.

Last date of receipt of complete application is **6-8-88.**

N.C. Mohanty
REGISTRAR

JADAVPUR UNIVERSITY

CALCUTTA—700 032.

REC/N/125/88 **Dated : 2nd July, 1988**

CORRIGENDUM

Reference the Jadavpur University Employment Notification No. A2/C/10/88 inviting applications for the three posts of Reader in History among other posts.

Under desirable column for II post 'OPEN' should be read against column (a) & (b).

Other stipulation of the above post will remain the same as notified earlier.

REGISTRAR

KARNATAKA REGIONAL ENGINEERING COLLEGE

SURATHKAL (D. K.) P.O. SRINIVASNAGAR-574157

KARNATAKA STATE

WANTED

Posts	Pay Scale	Total Salary in the minimum of grade
I. **Professor** : 2 Posts :	Rs. 1500-2500 (Pre-revised)	Rs. 3905.70
(1) Mathematics—1		
(2) Computer Engg.—1		
II. **Assistant Professor** 5 Posts	Rs. 1200-1900 (Pre-revised)	Rs. 3367.60
(1) Civil Engg. —1		
(2) Electrical Engg. —2		
(3) Mining Engg. —2		
III. **Lecturers** : 16 Posts	Rs. 700-1600 (Pre-revised)	Rs. 2147.20
(1) Electrical Engg. —4		
(2) Electronics —2		
(3) Mechanical Engg. —1		
(4) Mathematics —1		
(5) Physics —1		
(6) Chemistry —4		
(7) Computer Engg. —1		
(8) M.C.A. Course —2 (Under Mathematics)		
IV. **System Manager** : 1 Post	Rs. 1200-1900 (Pre-revised)	Rs. 3367.60
(in the grade of Asstt. Professor for 'O' Level Computer Section)		
V. **Entrepreneurship Development Cell** :		
(1) Senior Project Leader : 1 Post	Rs. 1200-1900	Rs. 3367.60
VI. **Nodal Centre** :		
(1) Project Officer : 1 Post	Rs. 1200-1900	Rs. 3367.60
(2) Computer Operator-cum-Programmer 1 Post	Rs. 650-1200 (Pre-revised)	Rs. 2074.30

Apply in the prescribed form on or before **8.8.1988**. The prescribed form alongwith details of qualification and instructions can be had from the College Office by sending a Crossed Indian Postal Order worth Rs. 10/- (for SC/ST Rs. 2.50 only) in favour of the Principal, K.R.E. College, payable at Srinivasnagar P.O. along with a self-addressed envelope of size 25 × 10 cm affixed with postage stamp of Rs. 2.00. Application received on plain paper and after the stipulated date will not be considered.

T. Ramchandran
PRINCIPAL

TAMIL UNIVERSITY

THANJAVUR

Advt. No. 4207/88 A1

Dated : 8-7-88

Applications in the prescribed form in quadruplicate are invited for th following temporary posts which ar likely to be confirmed for the propose Centre for South Indian Culture. Las date for the receipt of applications i the prescribed form is **29-8-88.**

1. **Director (Professor in History) (1**
2. **Associate Professors .. (2**
   - (i) Architecture & Sculpture
   - (ii) Music & Drama
3. **Lecturers .. (5**
   - (i) Literature & Folklore
   - (ii) Anthropology
   - (iii) Archaeology & Epigraphy
   - (iv) Linguistics
   - (v) Philosophy
4. **Research Associates .. (5)**
   - (i) Anthropology
   - (ii) Painting
   - (iii) Folklore
   - (iv) Architecture
   - (v) Music & Drama

Scales of Pay for the above Posts :
(U.G.C. Scales)

Post No. 1 : Rs. 4500-150-5700-200-730

Post No. 2 : Rs. 3700-125-4700-150-5300-200-5700

Post No. 3 : Rs. 2200-75-2800-100-4000

Post No. 4 : Rs. 2200-100-2700

Candidates who wish to apply for the above posts should possess a Ph.D. Degree except No. 4 and requisite experience in the relevant field. They may get the required application forms etc. by sending a written requisition with clear postal address accompanied by Bank Draft to the value of Rs. 25/- (Rupees Twenty five only) (Rs. 15 for SC/ST candidates) drawn in favour of the Finance Officer, Tamil University, Thanjavur 613 001 payable at Thanjavur.

All requisitions, however should be addressed to The Registrar, Tamil University, Thanjavur-613 001 accompanied by a self-addressed cover bearing postage stamps to the value of Rs. 2.60. The cost of the application blanks will not be refunded under any circumstances.

Dr. P. Chinnian
REGISTRAR

anjay Gandhi Post-Graduate Institute of Medical Sciences

Post Box No. 375, Rae Bareli Road, Lucknow-226 001 (U.P.)

ast Date : 1st August, 1988 **Advt. No. : 32/88**

REQUIRES

. o.	Name of the Post	No. of Post	Pay-Scale (Pre-revised)	Total Emoluments	Maximum Age
1.	Sr. Administrative Officer	1	Rs. 1250-2050/-	Rs. 2933/-	40 Yrs.
2.	Librarian	1	Rs. 1000-1900/-	Rs. 2202/-	45 Yrs.
3.	Assistant Store Purchase Officer	1	Rs. 850-1720/-	Rs. 2002/-	40 Yrs.
4.	Dy. Superintendent of Nursing	1	Rs. 1250-2050/-	Rs. 2933/-	45 Yrs.
5.	Assistant Medical Records Officer	1	Rs. 850-1720/-	Rs. 2002/-	40 Yrs.
6.*	Assistant Matron	2	Rs. 620-940/-	Rs. 1566/-	40 Yrs.
7.*	Nursing Sister	14	Rs. 515-860/-	Rs. 1320/-	35 Yrs.
8.	Junior Engineer (Bio-Medical)	5	Rs. 515-860/-	Rs. 1320/-	35 Yrs.
9.	Technical Assistant	4	Rs. 515-860/-	Rs. 1320/-	35 Yrs.
10.	Assistant Accountant cum Computer Operator.	4	Rs. 515-860/-	Rs. 1320/-	35 Yrs.
11.	Medical Record Technician	2	Rs. 515-860/-	Rs. 1320/-	35 Yrs.
12.*	Staff Nurse	235 (likely)	Rs. 470-735/-	Rs. 1221/-	30 Yrs.
13.	Senior Operator CSSD	1	Rs. 470-735/-	Rs. 1221/-	30 Yrs.
14.	Store Keeper-cum-Pharmacist	1	Rs. 470-735/-	Rs. 1221/-	30 Yrs.
15.	Senior Operator Laundry	1	Rs. 430-685/-	Rs. 1132/-	30 Yrs.
16.**	Store Keeper-cum-Clerk	1	Rs. 400-615/-	Rs. 1132/-	30 Yrs.

**Designation and Pay-Scale is likely to be revised.

Minimum Qualifications and Experience

For Post No. 1

1. First or Good Second Class Post-Graduate degree with diploma/degree in public administration/business administration/hospital administration with 10 yrs. experience of which 6 yrs. at middle level in large organisation/institution/corporate body. Should be conversant with administrative matters including personnel functions, training, management of properties, security and house keeping functions.

For Post No. 2

1. First or Second Class M.A./M.Sc./M.Com., plus a first or second class B. Lib. Science or a diploma in Library Science. Degree of M.Lib. Science will be preferred.
2. At least 10 yrs. experience as Librarian or in a responsible professional capacity in an University or equivalent Library.
3. Research experience with publications will be another preferential qualification.

Deserving candidates may also be considered for appointment on contract basis for a specified period.

For Post No. 3

Bachelor Degree preferably in Science, diploma in materials management and Inventory control from a recognised Institute. Diploma in Computer Operation and knowledge in its use will be desirable. Minimum 5-8 yrs. working experience in supervising capacity in Stores and Purchase Department of Scientific / Medical Institute/ R & D organisation. Should be fully conversant with the practical knowledge of modern technique of materials management like ABC analysis, R.O.I., E.O.Q. and import procedure and clearance of imported consignment and formulation of Tenders.

For Post No. 4

B.Sc. Nursing with 10 yrs. experience out of which minimum 5 yrs. should have been in an administrative capacity (Assistant Matron/Matron of reputed hospital or Medical College Hospital). Preference will be given to those with M.Sc. degree.

For Post No. 5

Graduate with degree in Medical Records and 1 yrs. experience or diploma in Medical Records with 5 yrs. experience in large teaching/research hospital.

For Post No. 6

B.Sc. Nursing preferably with diploma in Nursing Administration. 3 yrs. as Nursing Sister with Administrative experience.

For Post No. 7

Diploma in Nursing with 10 yrs. experience as Staff Nurse or B.Sc. Nursing with 8 yrs. experience in a large hospital or Medical College.

For Post No. 8

1. First Class diploma in Electrical/Machanical/Electronic/Refrigeration Engineering from a recognised Institution/Ploytechnic.
2. Minimum 2 yrs. experience in a reputed organisation / department/ Institution.
3. Candidates with prior experience in hospital / radiological/analytical equipment maintenance will be given preference.

For Post No. 9

Graduates with 3 yrs. experience of either working in a large Library or handling of audio-visual equipments. Candidates having Intermediate qualification with diploma in Lib. Science or Photography with similar experience can also be considered. Persons knowing typing or computer operation will be preferred.

For Post No. 10

Graduate in Commerce with Accountancy or Intermediate in Commerce with 5 yrs. experience and knowledge of computer operations.

For Post No. 11

Graduate with diploma in Medical Records and 1 yr. experience or Intermediate with diploma in Medical Records with 3 yrs. experience in large teaching research hospital. Candidates without diploma may be considered with at least 5 yrs. experience of working in Medical Records in a large teaching hospital in lower grade.

For Post No. 12

Diploma in Nursing with 3 yrs. experience in large hospital or a Medical College. B. Sc. Nursing will be preferred.

For Post No. 13

Graduate with diploma in CSSD Technology with 1 yr. experience or Intermediate with diploma in CSSD Technology and 3 yrs. experience in hospital. Candidates without diploma may be considered with at least 5 yrs. experience of working in CSSD in a large hospital in lower grade.

For Post No. 14

B. Pharmacy or Intermediate with diploma in Pharmacy and 3 yrs. experience of store keeping and Pharmacy.

For Post No. 15

High School with 3 yrs. experience of working with mechanised laundry preferably in a hospital in supervisory capacity.

For Post No. 16

Graduate with 3 yrs. practical experience of working as Store Keeper in a hospital.

***Note**

For Nursing Personnels : Candidates with experience in speciality nursing or who have undergone Post Basic Clinical Nursing Speciality short term programme approved by Nursing Council of India will be preferred. During Project Phase, selected candidates will get Project Allowance of Rs. 150/-, Rs. 125/. and Rs. 100/- p.m. for post 6,7 & 12 respectively.

Application typed on plain paper containing the following particulars should be addressed to THE DIRECTOR, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Post Box No. 375, Rae Bareli Road, Lucknow-226 001, along with marksheets and certificates of qualification and experience etc. **Separate applications for each post should be sent in separate envelope.**

1. Advertisement No. 2. Post applied for. Sl. No.—————Name————3. Full Name (in Block Capital) 4. Father's/Husband's Name 5. Date of Birth 6. Whether SC/ST 7. Address in Block letters for correspodence 8. Educational Qualification (Examination Passed/University/Board : Year of Passing/ % of marks/Division) 9. Technical Qualification; (a) Speed in Typewriting English & Hindi 10. Experience if any, Name of Employer Position held Period From.........to...... ...Salary drawn with last Pay Slip. Signature.

General Conditions

Allowances as admissible to the employees of UP Govt. will be provided. Additional increments ordinarily (upto 5) may be considered in deserving cases. Relaxation in age as per rules may be considered in otherwise qualified candidates. Candidates belonging to SC/ST and other categories will be given preference as per rules.

Persons in employment should send their applications through proper channel. The Director reserves the right to reject any or all applications without assigning any reason. Incomplete applications are liable to be rejected. No relaxation in minimum qualification is permissible.

Candidates must mention on top of Application the Sl. No. and Name of Post and Advertisement No., etc.

DIRECTOR

ADARSHA EDUCATION SOCIETY'S

ARTS, COMMERCE & SCIENCE COLLEGE, HINGOLI-431 513

Dist. PARBHANI (Maharashtra)

No ACH/88-89/670

Dated : 4-7-88

WANTED

Applications from the Eligible Candidates are invited for the post of Lecturer in 'Electronics', in the Sr. College.

The post is reserved for S.T. if reserved category candidate is not available the post will be filled temporarily from open category.

Pay Scales as per Marathwada University rules.

Applications with full details (Bio-data, Caste Certificate & true copies of Marks-lists of Graduate & Post-Graduate Degree) should reach within **fifteen days** from the date of Publication of this advertisement.

Those who are in service should submit their application through proper channel.

K.K. Dube
PRESIDENT

Ad. U.T. Rode
SECRETARY

Dr. J.M. Mantri
PRINCIPAL

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D52

University News

MONDAY, JULY 25, 1988

Rs. 1.5

Education Vs Entertainment

●

Perestroika in Indian Higher Education

●

Revitalizing Colleges

●

Benefit of Education

●

Literacy March

●

Science Consortium

CLASSIFIED ADVERTISEMENTS

INSTITUTE OF CORRESPONDENCE EDUCATION

UNIVERSITY OF JAMMU

Telephone No. 46369

ADMISSION NOTICE

Applications are invited for admission to the following Courses for the session 1988-89 through Correspondence :

1. M. Com. two years course;
2. LL.B. (Academic) two years Course;
3. B.A./B.Com. Three Years General Degree Course;
4. Certificate Course in Urdu through Hindi medium;
5. English Improvement Certificate Course.

The prospectus-cum-application forms containing full information can be obtained on all working days from 8-00 a.m. to 1-30 p.m. from the Office of the Director, Institute of Correspondence Education, University of Jammu, Jammu. The price of the prospectus of each course is as under :

Name of the Course	At the Counter	By Post
1. M. Com two years Course	Rs. 8/-	Rs. 10/-
2. LL. B. (Acd.) two years Course	Rs. 8/-	Rs. 10/-
3. B.A./B.Com. Three Years General Degree Course	Rs. 6/-	Rs. 8/-
4. Certificate Course in Urdu through Hindi medium	Rs. 6/-	Rs. 8/-
5. English Improvement Certificate Course	Rs. 6/-	Rs. 8/-

In case the prospectus is required by post an amount indicated above has to be remitted through Crossed Bank Draft/Postal Order drawn in favour of the Director, Institute of Correspondence Education, University of Jammu, Jammu. Money Order, postal stamps and cheques will not be accepted.

Last date for admission to above mentioned Courses without late fee is **30th September, 1988.**

Note :

1. The University of Jammu has not authorised any educational organisation, either recognised or unrecognised to make the enrolment on behalf of the University for any course conducted by the Institute of Correspondence Education, University of Jammu.
2. Candidates already undergoing any University course are not eligible for admission to the course.

Dr. Santokh Ram
DIRECTOR

RABINDRA BHARATI UNIVERSITY

56A, B.T. ROAD, CALCUTTA-50

Employment Notification No. RB-62/88

Applications are invited on the prescribed form for the following posts so as to reach the office of the undersigned latest by **16th August, 1988** :

(A) Faculty of Arts :

(1) Professor of Philosophy-1 post (2) Professor of History-1 post (3), Reader in Political Science-1 post, (4) Lecturer in Pol. Sc.-2 posts, (5) Lecturer in Sanskrit-1 post, (6) Lecturer in History-1 post, (7) Professor of Tagore Cell-1 post (with specialization in Tagore Studies), (8) Professor of Vedic Studies-1 post (with specialization in Historical—Philological Methodology), (9) Reader in Vedic Studies-1 post (with specialization in Srauta & Miniamsa), (10) Reader in Vedic Studies-1 post (with specialization in Indian Linguistics and sound knowledge of Paninian Grammar).

(B) Faculty of Fine Arts

(1) Professor of Rabindra Sangeet-1 post, (2) Professor of Drama-1 post, (3) Lecturer in Vocal Music-1 post (with specialization in Alap Dhrupad, (4) Accompanist—Department of Instrumental Music-1 post (with specialization in Tabla).

Scale of Pay (unrevised) for the post of Accompanist : Rs. 400/- to Rs. 900/- plus admissible allowances and other benefits. Scales of Pay (unrevised) for the Posts of Professor, Reader and Lecturer are as per UGC norms.

The Selection Committee, in making recommendations, will be guided by the relevant portions of the Rabindra Bharati First Statute (Supplement) under the Rabindra Bharati Act, 1981.

Other things remaining equal, preference will be given to the candidates belonging to Scheduled Caste/Scheduled Tribes.

Higher initial pay may be admissible in deserving cases on the recommendation of the Selection Committee.

The choice of the Selection Committee in regard to the post of Professor will not necessarily be confined to those who apply.

Applications in prescribed forms along with a crossed Indian Postal Order of Rs. 20/- (non-refundable) payable to "RABINDRA BHARATI" should reach the Registrar by **16th August, 1988**. The Application Forms and the necessary information regarding the minimum qualifications for appointment to the aforesaid posts will be available at the University Office. Condidates who intend to obtain forms and the necessary information by post should send a self-addressed envelope (10" × 5") with postage stamp of Rs. 2.60 p.

Those who applied earlier for any of the aforesaid posts in response to the previous Notifications No. RB-59/87, RB-58/86, RB-57/86, RB-49/85, RB-48/84 may not apply again, as they will be duly considered along with the other candidates.

R.C. Mitra
REGISTRAR

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Editor :
SUTINDER SINGH

Education Vs Entertainment

Amrik Singh*

Why should there be any conflict between education and entertainment ? There is no essential antagonism between the two. In several cases one can be educated as well as entertained at the same time. This however is the theory of it. In practice what happens is the opposite, or almost so. And this is why there is a problem.

The electronic media has been a part of the modern landscape for over half a century in a large number of countries. Even in India, the radio became a going concern in the early 40s. Television was much slower to be introduced. Within the next few years, however, it would be almost a quarter century since television was introduced on a commercial scale. The colour part of it is only a decade old but as far as the black and white part is concerned, the first tentative steps were taken in the 60s and some time later came the commercial dimension.

Wherever television has been introduced, it was always maintained that it could also be used for instructional purposes. To some extent it has been so used but there is something in this medium which militates against instruction in a sustained and systematic way. Instruction requires concentration but the electronic media is totally inappropriate for that purpose. The attention span on television or radio is a minute or so. Anything which takes longer than that tends to disperse attention.

The point about the electronic media is that it makes no demand on one's thinking capacity. Instead, everything skates on the surface and one can keep on looking at the "idiot box", as they say, without being aware of what is being said or projected; and one's attention is virtually fully occupied. Therefore, nothing is more appropriate for purposes of entertainment than the electronic media. Most people prefer it that way, partly because any form of thinking is painful and in any case nobody wishes to think all the time. Every one wants some diversion or entertainment and the electronic media is ideal for that purpose.

All this is widely known and has been so for quite some decades now. It was this unique characteristic of the electronic media which led one of the leading analysts to make that oft-quoted remark—the medium is the message. This truth has come to be recognised overwhelmingly and policies in regard to the electronic media are framed all over in terms of this basic formulation.

It should not have been necessary to say all this but for the fact that a two-pronged strategy followed over the decades has led to a situation where extraordinary efforts are being made to promote the electronic media and not much attention is being given to the print media, indeed all those things which concern education in the wider sense of the word. This should be evident from the whole range of activities under the heading of schooling, libraries (both educational and public), book publishing, modes and channels of book distribution, the pricing of books, the availability of cheap paper and a dozen other

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things which all contribute to the building up of the parallel stream of the print media.

Without going into too many details, it requires to be recognised that not only is the educational base not expanding as extensively as it should but even the supporting services which have a bearing on the growth and spread of education are not being given due attention.

If one wishes to know whether there is the hunger to read or not, and looks for some evidence, one has only to look at the way the language press is growing. Its rate of growth is much higher than the rate of growth of newspapers in the English language. Not only are these newspapers selling in larger numbers, the various Indian languages are also growing in consequence.

This is not to denigrate the contribution of those who produce imaginative literature. In fact it is widely recognised that if one wishes to reach the soul of India, it is to writers in the regional languages that one should turn; and so on. What about the literature of knowledge however as distinct from the literature of imagination ? It is in that respect that the newspapers are playing a role. Whatever it is—international relations, economic issues, scientific controversies and so on—in respect of each one of them that the language press is playing a pioneering and useful role. The importance of the written word, even if it is daily or weekly journalism, needs to be recognised.

The publishing industry, such as it is, however is unable to meet the variegated demands of the growing reading public. So many factors are responsible for it. But one overriding factor is the fact that nobody has recognised the importance of the written word and its crucial role in the intellectual development of the country. The electronic media is receiving support in every possible way. For one thing it has glamour and for another it is useful as a vehicle of propaganda. Therefore the wider its coverage, the greater its usefulness.

The existing situation where it is controlled by the Centre exclusively provides a still greater incentive to promote it. If one looks at the manner in which the television coverage has expanded during the last one decade, it becomes clear that this did not happen in a fit of absent mindedness but according to a well thought out plan.

The question to ask is if it is in the interest of the country to deliberately do down the print media in its various forms and manifestations. To take only one example, what is responsible for the somewha high price of newspapers ? It is the uncommonly high cost of the newsprint. While it is true that a good deal of newsprint has to be imported from outside and it is not possible to add to the quantum of production within the country in the short run, why should it be necessary to add taxes to the manufacture and import of newsprint ? Newsprint is required not only for newspapers and magazines but also for paper backs. The price of other types of papers is equally high.

It is not so innocent as it looks. The intention is not to add to the revenue of the country; the intention is to load the dice against the print media. If these policies continue to be followed without being drastically modified so as to redress the balance in favour of the print media, we would soon have a generation of people who would shy away from the act of thinking, disdain it as being a nuisance and apply their knowledge of the alphabet mainly for reading of comics, etc., and keep clear of those issues and problems which make them think and reflect.

Giving primacy to the electronics media at the cost of the print media is a move in the wrong direction. A country grows when it advances all along the board. One cannot advance in one direction and leave the other flanks uncovered. Something of this kind is currently happening and it is time to take note of it and devise all those strategies which require to be devised in order to reverse the situation. What we need is a judicious mix of the print and the electronic media, not a situation where one dominates the other. □

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are asmuch open to you as to our contributors. Your communications should, however, be brief and to the point.

Perestroika in Indian Higher Education

D.A. Ghanchi*

C. F. T. R. I., MYSORE

Indian higher education has been historically haped by a variety of forces—cultural, political, conomic and psychological—over the past several ecades. The structural contours of the system were neticulously planned by the British in keeping with heir requirements as a colonial power. They laid lown the functional parameters within which all connected with higher education, namely, the dministrators, the faculty, the students and the tate as the overseer, had to operate. To ensure the operation of the entire mechanism, rules were prescribed, conventions in consonance with the rules were developed and practices were evolved to implement the decisions taken at specified points. In spirit, it was the replica of the steel-frame of the civil service model in vogue then in the field of public administration adopted to rule over the country.

This model of educational structure was inherited by us when the country gained freedom in 1947. With the proclamation of republic in 1950 under a constitution that guaranteed fundamental human rights for the citizens of the free, democratic country wedded to the philosophy of secularism and socialism, we began to realise the anachronistic nature of the system of higher education we had inherited from the British as we tried to convert it into an instrument of national development. This was the feeling of the University Education Commission (1948) and the Indian Education Commission (1964). Their reports, therefore, stressed the need to restructure our higher education conceptually as well as formally.

The national debate we had during 1986 on the historical document of the new policy on education brought in focus the paramount need of restructuring our higher education in order that it might be infused with a new ethos and a renewed commitment to make it serve the cause of national regeneration. The pressing reasons to do so are many, the chief being the following :

The system has a rigid structure which is ridden by rules that have become ends in themselves. It's a power dominated structure where the urge to acquire, hold and weild power has thoroughly politicised all the organs of the system to the detriment of the educational goals the system is supposed to serve. As a result, the structure has turned into a closed system impervious to outside forces and insensitive to outside needs.

The academics of the system have consequently become atrophied. We have a lot of dead wood in the courses, an unquickening teaching exercise in the classrooms and a ritualistic examination system devoid of even a modicum of credibility, let alone objectivity and ethical justification.

The operation of the system reminds one of a radarless ship on the high seas. The huge machine consumes a tremendous amount of national energy—finance, time, physical resources and investment in men and materials, but yields an output of doubtful quality and utility.

The document on National Policy of Education (1986) rightly points at this trinity of basic weaknesses of higher education in India, and advocates the adoption of an appropriate strategy to consolidate the positive features on one hand and to remedy the weaknesses on the other with a view to inserting into the system organic cells for its health and vigour. The philosophy of 'PERESTROIKA' espoused by Mikhail Gorbachev to liberalise and energise one of the most closed social structures of the world has a relevance for India's higher education too. We need to restructure the form, the contents, the procedures and the spirit of our higher education, and permeate it with the invigorating dynamism of 'GLASNOST', the attitude of freedom, genuine and substantial.

There are three areas wherein 'Perestroika' should be applied. They are :

(1) The systemic framework of higher education
(2) The academic domain of the system
(3) The operational mechanism of the system.

Let's examine how 'Perestroika' can be brought to bear upon these three vital dimensions of Indian higher education.

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The System

The inflexible system that has self-perpetuated itself needs to be restructured in the following manner :

(A) The sub-structures obtaining in the power hierarchies in universities and colleges affiliated to them should be streamlined in respect of their composition, rationalised in respect of their powers and duties, and realigned with one another in a relationship of mutuality and cooperation. This would necessitate amendment of University Acts and Statutes, Ordinances and Regulations framed thereunder. There will have to be considerable fluidity in the relationship between various components of the system leaving plenty of elbow room for accommodation and adjustment, individual freedom and collective well-being.

(B) Autonomous structures for colleges and institutions should be developed as a rule, rather than as an exception, and the agenda of the Action Plan of the New Education Policy 1986 in this respect should be implemented as an article of faith to be universalised later under a very sympathetic national structure in the form of a Council for Higher Education. Pending this, small beginnings toward autonomy be made in the present relationship between affiliating universities and their affiliated colleges in as many ways as practicable.

(C) A new psyche of participativeness should be gradually developed in our higher education in order to transform the erstwhile wooden, cold and unresponsive structures of power into sensitive organs of service to the cause of education.

The Academics

We have been long used to a hierarchical, unilinear academic structure that has worked on the 'take-it-or-leave-it' principal. In order that it is made sensitive to a changing socio-economic scenario constantly being shaped and reshaped by an ever-emerging technoscientific climate, academic restructuring on the following lines is inevitable :

(A) The present single-point entry-exit structure of higher education should be replaced by a multi-point entry-exit structure freeing the educational pursuit from structural barriers of age, duration and slabs of time. This, once accepted, will pave the way for an open education system, a beginning of which has already been made in the form of the IGNO and a few state open universities.

(B) A flexible structure of diverse courses shoul replace the decades old cut and dried courses, whic have become irrelevant and meaningless not only i terms of their contents but also of their yield value Unfortunately, even the modest three-tier restructur ed frame of curriculum recommended by the UG years ago has remained untried out, implying thereb the need of a greater moral courage and a stronge political will to pick up the forgotten threads.

(C) In matters academic, curriculum restructuring methodological refurbishment, reliable evaluatio and productive classroom interaction, an invovative approach through an attitude of bold 'GLASNOST is a must if we want higher education to be a nurser of the best talent of the nation.

The Operational Mechanism

How is the system of higher education mad operative in our country ? We have experienced th evil effects of bureaucratisation of various structure of the system. We have also been the victim of a thorough politicisation of the various organs o decision-making, be they academic, organisational o financial, 'Perestroika' should be applied to rid the system of both, and replace them by more positive dynamics of individual behaviour, interpersonal relationship and decision-making in order to ensure organisational health and vigour for maximum productivity with efficiency and economy.

(A) 'Accountability' in place of 'Authority' should be the guiding principle of all operational strategy whether in the classrooms or in laboratories, in senate halls or on playgrounds. This will inevitably entail the restucturing of the attitudes on the part of all.

(B) Excellence in place of mediocrity should be the watch-word of all our endeavours, all our pursuits and all our activities, for higher education must turn out future leaders of highest competence in the realms of knowledge—arts, science, technology, business, industry and public life.

(C) Creativity should be the ultimate goal of all our investment in higher education, for we, as a part of the human race, owe a debt to the posterity which we must endeavour to repay through a relentless search and research of knowledge. We must con-

(Continued on page 8

REVITALIZING COLLEGES

K. Krishnakumar*

The Government of India's national policy on ducation (1986) envisages "delinking of university egrees from the requirement for recruitment to ser-ices for which a university degree need not be a ecessary qualification" for two reasons. First, differ-nt jobs require different combinations of knowledge, kills and aptitudes and, therefore, performance in n academic examination may not be the appropriate neans of screening candidates for employment. Second, problems of comparability of grades/marks awarded by about 160 universities of different hues stand in the way of making any meaningful assessment of the suitability of graduate of various universities. The policy, therefore, expects that "delinking should ensure that the craze for degree is discouraged and that pressure on higher education is reduced".

Though the official delinking of degrees from jobs is still in the pipeline, in actual practice, degrees seem to have already lost much of their bearing on jobs. A graduate getting a job as soon as he passes out of the college merely on the strength of his degree is a thing of the past. Today, most of the recruiting agencies have formulated their own testing machinery to assess the relative merit of graduates hailing from the various corners of the country. The Union Public Service Commission, State Public Service Commissions, Staff Selection Commission, State Bank of India, Banking Service Recruitment Boards, Railway Recruitment Boards, insurance companies and a host of others conduct various tests of their own to assess not only the personality of the applicants, but their grasp of the branch of knowledge which they claim to have mastered. The intention of the University Grants Commission (UGC) to hold an all-India test for the recruitment of college teachers aims at offsetting the great divergence in the quality of degrees awarded by Indian universities.

Defence recruitment agencies conduct not only physical fitness tests, but also tests on subjects like English, mathematics and physics, not willing to be guided by the grades awarded by universities. Any graduate is eligible, irrespective of his grades, to write the prestigious civil service examinations and thus the marks awarded by universities pale into insignificance. The private sector, for its part, scarcely ever relies on the candidates' grades in the recruitment process. All this goes to show that university degrees, in effect, already stand delinked from jobs.

Colleges in a Quandary

In the face of all these drastic changes that are fast coming up, what are the 160 universities and 5,600 colleges going to do for their survival ? Barring a few hundred professional colleges, the vast majority of these institutions produce arts and science graduates, whose prospects of employment are not too encouraging. Only the most gullible of the college entrants today would give credence to the idea that possession of a mere degree could ensure them a job and advancement in their career.

The assumption that delinking of degrees from jobs will reduce pressure on higher education sounds rather false. The demand exists only for professional courses like engineering and medicine and not for many of the courses in humanities and sciences.

Table I

Declining Popularity of Arts Degree Courses

Year	Arts	Science	Commerce	Engg./ Tech.
1977-78	11,21,238	4,72,981	4,63,967	1,03,706
1978-79	11,07,407	4,92,143	4,93,449	1,11,659
1979-80	10,76,076	5,08,763	5,16,170	1,18,607
1980-81	11,14,417	5,33,859	5,54,253	1,28,937
1981-82	11,90,117	5,78,766	6,28,031	1,30,189
Increase in enrolment	6.15%	22.37%	35.36%	25.54%

Source : *University Development in India* (UGC)

Table I shows the dwindling popularity of arts courses over the years. Degrees in engineering, medicine, etc. cannot obviously be delinked from their relevant jobs and what remain to be delinked are the degrees in humanities and sciences. But the fact remains that the demand for non-professional co-

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urses has come down considerably in the last decade or two. Furthermore, correspondence courses, which are less expensive and more flexible, are coming in a big way to eat into the enrolment figures of conventional colleges.

In the face of this all round onslaught, many colleges are faced with the serious problem of how to attract students to their courses which seem to have outlived their usefulness. For instance, degree courses in economics, history, political science, sociology and languages go begging.

Perhaps the time has come for the colleges to sit up and do some soul-searching to make their programmes worth the effort.

A More Energetic Role

In the first place, it must be realized that a college is not a mere purveyor of knowledge. If acquisition of knowledge in a particular discipline were the exclusive goal of students, they could very well obtain it with greater ease today through distance education. The fact that a student chooses to join a three-year B.A. degree course in a regular day-college in preference to a three-year correspondence course and that he is willing to pay for board, lodging and transport, in addition to tuition fees, indicates that he looks forward to something more from these regular programmes.

For example, a college is expected, besides its core academic instruction, to shape the over-all personality of its students by means of physical education, sports and games, National Cadet Corps (NCC), National Service Scheme (NSS), adult education programme, etc. A college is further expected to sharpen the intellectual acumen of the students by providing them with opportunities of taking part in general knowledge contests, debating, oratory and essay writing. A college may encourage its learners to try their hand in creative writing, histrionics, drawing and painting, music and dancing, designing and modelling.

All these activities are essential to develop the intellect and personality of the youth in a balanced manner. What is more important, cultivation of these special skills in the students will see them through in their attempt to find a suitable job after graduation.

Unfortunately, colleges at the present juncture are lackadaisical in promoting this aspect of education. Universities and directorates of collegiate education rest contented with supervising the peripheral features of teaching in their affiliated colleges, such as covering the syllabus and the physical presence of teachers and students. The onerous task of human resource development is left to the care of principals. When a college is fortunate enough to be headed by an energetic and enterprising principal, these extra-academic activities thrive under his stewardship. When a college is burdened with an unimaginative and uninspiring principal, all these activities are found more on paper than in practice.

The great significance of these extra-curricular activities must be seen in the light of the fact that it is these skills and abilities that are an open sesame to the student rather than a simple degree to find a career.

Obsolescent Pedagogy

The learning of English has been a frustrating experience for the college students. They learn English for a year or two during the degree course. They scarcely attach any importance to the learning of English, despite their knowledge that their proficiency in English will play a crucial role in their search for a job. And their neglect of English is not without reason.

What is expected of them in their later life is an ability to speak and write simple English without faults. Whether the curriculum in English aims to impart these communicative skills to students is open to doubt. To put it simply, what they learn in their English classes hardly helps them to perform effectively in English in the competitive examinations, much less in the oral interviews.

The syllabus for English teaching is framed by the university and the colleges scarcely have any say in the choice of textbooks or devising the pattern of examinations. The textbooks prescribed are often far above the heads of learners and the examinations merely test the students' ability to store ready-made essays in their brains.

Though people concerned with higher education are seized of this predicament, the situation is not likely to change dramatically in the foreseeable future. An individual college can, on the other hand, do something in this regard.

Students' proficiency in English varies from place to place and from college to college. A college can spot those students who are weak in English and hold intensive classes for them either in the evening or during holidays. A short, locally-devised, intensive course in English keeping the learners' specific needs in view can pay greater dividends than a formal, inflexible, centrally-conceived programme in English.

Another neglected area in the conventional college curriculum is spoken English. This skill is neither taught not tested in our traditional system. Paradoxically, it is the oral communicative ability in English that is going to have a major say in the future career of a student. It is unfortunate that such a crucial skill is given the go-by in all our English teaching programmes.

It may be pertinent to point out that the well-known international institutes that successfully teach French, German and Russian have an oral component in their examinations even for the very beginners. A college may seek to provide this missing link by locally arranging spoken English classes for the students.

Incidentally, competence in English need not be the one and only goal in human resource development. There is ample scope and need to learn a few more languages to survive in the present competitive world. In a multi-lingual country like India, the significance of mastering a number of languages cannot be overstated. The languages to be taught need not necessarily be the European languages, there is a great need to teach Indian languages as well. Even after four decades of independence, it has not been easy to find suitable persons who can translate, say, from Bengali to Gujarati, from Kashmiri to Kannada, or from Urdu to Oriya. Translation of literature, etc. from one Indian language to another is often done through English or Hindi. There is a dearth of persons who are equally competent in two or more Indian languages.

A college may offer these language courses as part-time programmes. When a language is taught as an obligatory component of the undergraduate curriculum, it is likely to meet with resistance from some quarters. When the same is made optional and on payment, students are apt to see the usefulness of the courses. In fact, the Kothari Commission (1964-66) recommended the teaching of additional languages at schools as optional programmes. Such non-conventional avenues of employment need to be tapped by arts and science colleges to ensure their own viability.

College Library

A college library remains an under-explored treasure. The library is kept open normally during working hours, i.e., when the students are expected to be in their classes. The actual duration for which the library is available for the students is barely two hours in a day. In other words, tens of thousands of books worth millions of rupees remain unused for the greater part of the day in every college. No thinking person will agree that this gross under-uti-

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lisation of scarce resources is inevitable. Something ught to be done to correct the situation. Books are there to read, not merely to exhibit.

While the University Grants Commission provides funds for the purchase of new books year after year, there is hardly anyone to defray the manpower that is required to handle the ever growing number of volumes. Steps must be taken to keep the library open for longer hours to enable the students to consult books and journals before and after their class hours. Teachers should instil in the minds of learners that time spent in the library is time well-spent.

Sports and Games

As regards sports and games, a few colleges give them peripheral importance and many give them none. Many an academic looks down upon these activities as an avoidable digression from the serious pursuit of knowledge. Nonetheless, the fact that many organisations are willing to recruit players for the sake of their being players should serve as an eye-opener to the colleges. Games like cricket are no longer mere avenues of amusement, but they have become one of man's serious pursuits involving fortunes. In view of this changed attitude towards games, colleges should prepare students in such a manner that some of them in future become professional players, coaches, umpires, commentators and sports journalists to make a living.

Admittedly, not all the suggestions made above may be appropriate to all educational institutions. Nevertheless, some of them, tried with sincerity c purpose, may provide the *raison d'etre* of th colleges.

When all is said, the most crucial question remain unanswered : How to finance these extra-mural acti vities ? Surely, Governmental aid cannot be sough for such non-conventional endeavours, nor is it desi rable. These are days of self-financing institutions. A college can make these optional programmes avai lable on payment. And students, on their part, wil be only too willing to pay a nominal fee to acquire a skill that can see them through in their search for a foothold on a career.

It is heartening to note that a small number o colleges have already embarked on such ventures introducing several useful part-time courses in spoken English, foreign languages, translation, journalism, public speaking, management, law, taxation, advertising, computer programming, system analysis, operations research and so on.

In the final analysis, a great deal depends upon the ability of the principal to make the best of the situation. When a principal is uninterested in or ill-informed of any one of the spheres—sports, games, general knowledge, debating, eassy writing, fine arts—that activity does suffer during his tenure. Under an incompetent principal, even earnest teachers stop exerting themselves. It is the principal who puts the students along right or wrong lines. A college, like any other institution, stands or falls with its head. ☐

Perestroika in Indian Higher Education

(*Continued from page 4*)

tribute to the ever expanding fund of knowledge in the world through our best thinkers, scholars, writers, scientists, technologists and talented men and women who will have to be prepared by institutions of higher learning.

India has a stake in the future of the world of tomorrow which she can meet not with an obsolete structure of higher education because it is no match for the newer, unpredictable problems. New educational perceptions supported by appropriately restructured system of education alone can provide an adequate answer to the emerging needs of a developing country treading the arduous path of democracy, egalitarianism and justice in a world constantly threatened by racialism, exploitation and political domination.

It is hoped that 'Perestroika' imaginatively planned and carefully implemented in a climate of 'Glasnost' in the three vital dimensions of our higher education, namely, its structures, academics and operations, will transform it into a power house of a firstgrade human resource capable of putting the country on the pinnacle of progress and prosperity. ☐

Convocation

BENEFIT OF EDUCATION

"Imagination, humour, patience—these are qualities essential in all dealings between nations and peoples. And, there should be other qualities too—integrity and courage. These are indispensable to the living of a responsible and productive life, having been given the immense benefit of education," observed Padmabhushan G.L. Tandon, Chairman, Coal India Ltd, Calcutta, while delivering the convocation address at the 55th annual convocation of the Annamalai University. Excerpts.

Not all youth in this country have the benefit of University education, primarily on pecuniary constraints. But getting into a college is not everything. As Dr. Radhakrishnan has pointed out succinctly, "It has become more easy to get into a college and more difficult to get educated." This takes us to the fundamental question—"what is education ?"

In the words of the eminent economist Alva Myrdal, Education is that 'lever' on which depend all decisive development of mankind. "The paramount role for achieving any kind of development—and most definitely any development great enough to be judged beneficial to our whole world of the future—belongs to education." Truly, Education is the means by which the youth is trained to serve the cause of drastic social and economic changes. I would like to lay more emphasis on the 'social' aspect of changes, I look forward from the rising generation. Willy nilly, as a matter of sheer necessity, slowly or speedily, we do attain economic growth; there may be some occasional slips; we do manage to rise up. Mind you, we cannot rise up that much easily or quickly from a fall in our social standards. Therefore we should be quite guarded in the social milieu.

Many skills can be taught in vocational schools. But there are also qualities that neither books nor gadgets can offer the individual. Imagination, humour, patience—these are qualities essential in all dealings between nations and peoples. And, there should be other qualities too—integrity and courage. These are indispensable to the living of a responsible and productive life, having been given the immense benefit of education.

If Education is a kind of training, it is more a training of the mind, for that the basis, the corner stone on which everything else could be built. Mind is a scientific instrument, and it plays a key role in all investigations. As Swami Paramananda of the Ramakrishna order puts it :

"In all investigations certain instruments are necessary, as we see scientists inventing finer and finer instruments for their investigations. Also for spiritual observation we need a form of mind which can discern the subtler things, imperceptible to our ordinary sense faculties. The concentrated mind is such an instrument and the only one fitted for higher research."

Whatever be the social stresses and strains, vocational hazards, mind should be without fear. Of all emotions, the least compatible with freedom and growth is fear. A wholesome personality is one who is rid of fears. From time immemorial, the dedicated teacher has always hoped to educate not this or that fragment of an individual, but the whole human being. This task remains unchanged in the electronic era and will continue to be so even in the impending robotic epoch. Yet it has to be borne in mind that learning is a continuous process; the more we learn, much more remains to be learnt; perhaps the things we learn are different at different stages of life.

A student draws from the academia just a fourth of what all one could learn institutionally. The complementing three quarters being : inheriting erudition from elders, facets from choosy friendship, and ultimately the wisdom of one's own experience. The first stage you have now completed; most of you would have had in parts, benefits from the second and third sources. The fourth you are going to find for yourselves.

Yet, institutional education, however, fragmental it is, cannot be ignored, as that is rudimentary, despite its limitations. The seeds of shaping the future are sown in the formative years of education. The University Grants Commission was sagacious when it opened one of its reports two decades ago that the destiny of India is being shaped in her classrooms today. I presume some of you would take to teaching from the approaching academic year and in that capacity you would be shaping the nation's destiny yourselves. To those who would take to chalk and talk, I shall commend the golden words of Swami Chidbhavananda : "A country is nothing more and nothing less than the teacher who is its builder".

I hold teachers along with such intellectuals who immortalise themselves with their products. A teacher, therefore, should be more than one who educates. He must be a leader, as the teacher in fact was in ancient societies. As such he can revitalise the intellectually anemic society. He can creatively share the responsibility for reconstructing a social order whose ancient values and traditional beliefs are being destroyed or eroded by the surge of new ideas and practices. He can do so by realising—and helping others around him realise that in human society, as in Nature nothing needs to be lost irretrievably, even if much gets transformed.

The qualities of the individual we want to be educated serve us help identify the qualities we need in the true educator.

In the light of contribution a teacher can and should make to a society, he is surely entitled to the respect of people—and something more. He is certainly entitled to remuneration that gives him freedom to think, to study, to create—and thus to act in the role he must fill effectively, the role of a trail-blazer for the society he lives in.

But coming to the system as such I should say we are, doling out knowledge-capsules hourly bells, loading our lads and lasses with cart-loads of books. This is not all that counts in education. Quality should be reflected when quantity of teaching aids and expenditure therefor soars up. Sensing the plight of books our children carry to schools with assinine patience and endurance a modern Tamil poet wryly quipped : Loading on the backs, not on the brains." Rural or urban areas, there is not much difference in the book-load, but there is difference in other aspects.

There is a disturbing disparity in the academic attainments of rural and urban schools; and even in cities, standards vary from government to private schools, whereby, I am afraid, we are creating two sets of students—one with high IQ, but unaware of life's rigors, and another down-to-earth in attitude but rather far from the growing frontiers of knowledge.

There should be some jettisoning to establish a society of even attainments. I would leave it to educationists to ponder over and evolve a viable way-out to set right the lopsidedness. Another matter that needs mention in this context is inter-regional mobility of students at higher levels of education, network arrangements among institutions engaged in research and development and life long education.

I would appeal to the outgoing students to continue their studies with postgraduate diploma courses in allied or even altogether new subjects of their interests, even after getting a vocational footing, temporary or permanent.

Don't bid a good-bye to books, whatever be your vocational constraints, keep the habiat of at lea selective reading; I read quite lot, amidst chaining chores, mo books; more knowledge, if on we are choosy. Two columnis of a business magazine who inte viewed top-level corporate mana gers of big companies recentl about their reading habits, hav this to say in their introductor remarks : In today's world o high-tech and electronics, hypno tic power of audio-visual medi has enslaved even intelligent mind Most well-to-do people, when the are somewhat free from their hecti pressure-filled routines turn t their TVs, videos, or music sys tems. Rarely does one pick up a good book and read it from cover to cover. As the twentieth century speeds towards its inevitable close, ready to bid farewell to the life of leisure and romance, the first casualty it leaves behind is the habit of reading, for it is doubtful if the power of the word can survive in the new age of super computers and smart robots. As yet, mercifully, the love for reading is not totally dead."

I wish you keep alive the habit of reading for its direct bearing on thought-process, and sub-conscious gains.

Scientific temper is what we lack very badly today since we were under alien yoke for centuries, limiting our scientific pursuits and other attainments. With the change of the scenario the time has come now for the Universities to pick up the fallen torch to show the path of light to the young people, to build up the nation with strong moral values and patriotic spirit. It is our duty to return to the country much more than what we are getting.

Our country is rich with the resources, but large sections of the people are poor because we are not harnessing our hidden resources in full. We, therefore must, work and live to help others and build our country strong. Remember the words of Swami Vivekananda, "They alone live who live for others". Let us therefore dedicate ourselves for the country and for our people.

At a time when people's needs are so great, the University should not remain an ivory tower. It should extend a welcome to all men and women who wish to make use of its resources of human talent, its libraries, its laboratories. There is a hunger for education throughout the world, a hunger that is almost a physical need. As Ms. Vera Micheles Dean of the United States of America admits, this need is felt not only in the newly emerging countries, but in the advanced countries too. Ms. Dean adds : "To meet this hunger, to feed this admirable appetite, our Universities should be open day and evenings the year round, not only for relatively brief periods each day, nor merely for seven or eight months a year. Universities are citadels of tomorrow where all citizens can build—together a new intellectual security among the insecurities of the world."

I believe, the insecurities of the world could be won-over and most of them are just transitional. As one born in pre-independence days, had education then and career formation at the dawn of independence, I would implore you not to go awry at certain insecurities, presented out of proportions. I can vouch this for you from my own career given to mining and manning respectively natural and human resources. I am in the coal industry and naturally I might quote instances from there, as all education is a process of proceeding from the known to the unknown.

In the energy sector, coal is an easily diminishing asset. It energises vast multitudes of our industrial ventures and meets nearly sixty per cent of our commercial energy needs. With a revenue of about Rs 3500 crores, Coal India sells coal equivalent to about 50,000 trucks every day. Coal warms almost every home and hearth and, therefore, holds interest almost everywhere. Even a casual mention of the coal industry, particularly mines of Bengal and Bihar one immediately starts thinking the mafia in and around Jharia and Dhanbad. Being at the helm of the coal industry for two years, I feel this mafia talk is more a myth than the reality.

Coal India produces about 90% of the country's coal, employing an astounding figure of 6,75,000 people, thereby becoming the single largest corporate employer in the world. A company of this magnitude is bound to bristle with problems, at this point of social life where joint families are in jeopardy with the traditional feud of mothers-in-law and daughters-in-law hotting up. Albeit I manage the company, rather the family, of about seven lakh direct employees and thousands of contacts right down from the 450 mines to several lakhs of our consumers. That is because even before professional management entered the academic portals, our mentors drove home in us precepts contained in age-old treatises, say Tirukkural, Bhagavad Gita, and quite a few others. I cherish them as early texts on management in that they deal with human relations first and foremost, which is the *sine qua non* of all management methods.

The book 'Human Values in Management' by Swami Ranganathanandji is the latest on this lore. I trust, you will enshrine those cardinal principles of sound management and the profits of being an organised personality.

So, big or small, you may have to manage units or departments sooner or later. I wish sooner, as these are days of young executives. As for ourselves, public sector managers, I might say, many an unfounded blame is laid at our doors for the lapses of the industry. Unfortunately, we are neither causative factors nor curative agents for such stigmas. So when you face unmerited 'blames' you should stomach them and suffer with grace even disgraces for that matter, with equipoise and forbearence; for, ultimately nothing pays in life as much as equanimity.

'The world is yours, if you do not gloat on success and grieve over failures'; that is the message of the Gita. The celebrated Tamil mystic, Kumaraguruparar who learnt Hindi at his will, as if by the waft of a wands, as per hagiology, has sung so in his Neethineri Vilakkam which is held as an eru-

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We Congratulate . . .

(1) Prof. Mahendra Singh Sodha who has been appointed Vice-Chancellor of the Indore University.

(2) Dr. (Mrs) K.K. Sharma, Prof. & Head, Department of Food and Nutrition of the College of Home Science of the Punjab Agricultural University, who has been elected Fellow of the International College of Nutrition (ICN) in recognition of her significant contribution for the advancement of nutrition.

dite elucidation of Tirukkural. Here is my free paraphrasing of a stanza that bears relevance to the context.

"The tenacious duty-minded persons are those who do not mind physical stress and strain, equally unmindful to satiate appetite, not getting into sleep, not caged within clock's confines of the day, not get hurt while being insulted."

This has given me strength in managerial career through thick and thin and I am happy to commend these lines to your cascade of memory, which you may carry all through your life. I wish you work so hard, so fast and so much that the clock is jealous of you.

To my young friends, who have assembled here to take their degrees, I would say—Education is a companion which no misfortune can depress, no crime destroy, no enemy alienate, no despotism enslave, Equipped with this precious trait, I wish you add therealong alacrity, fortitude, self-control, and a sense of balance in your dealings; that is what the fast changing world warrants. These are qualities of heart and soul complementing the attainments of the head. As the Grecian philosopher Heraclitus puts it, there is not so much value to eyes and ears without a heart throbbing with love and a soul yearning for perfection.

Ancient Indian treatises also advocate this, when enunciating the nature and gains of education—"Vidya Dharmena Shobate" (Learning shines by conduct) is the dictum of our scriptures, even as the Tirukkural :

"Katrapin Nirka Atharku Thaha".

Just as education is not anything new for the ancient Indian society, something of a convocation was also not alien to our soil. In those good old days of 'hermitage schooling'—residential type of education—the Gurukula, the departing disciple was advised as to how to conduct himself on leaving the precincts of the preceptor. I happily deem those instances as virtual convocation addresses. If not this type of gowns and hoods, there might possibly have been some kind of investiture or other of the diploma and the insignia. What matters now is not the sartorial semblance but the spiritual strength of the occasion. □

Attention Scientists and Technologists

Indian Expertise in Science and Technology

The Research Cell in Economics of Education of the Association of Indian Universities is conducting a survey of Indian expertise in science and technology in the University sector. It is proposed to prepare a comprehensive database of the skills, knowledge and facilities of the university level institutions as well as a directory of experts in various disciplines of science and technology. The survey is also intended to catalogue the expertise and current research work of Indian scientists and technologists in various fields of science and technology, and will be used as an input for the compilation of a comprehensive database on the scientific and technical manpower in the country. The database will provide a ready reference to the industry, commerce and allied sectors of Indian economy for identifying experts in the relevant fields.

The scientists and technologists engaged in teaching and research in the universities and university level research institutions in India **at the lecturer or equivalent and above levels only** are requested to fill-up the prescribed form, which can be had from the undersigned. The completed form should be returned latest by **September 30, 1988**.

The responses from the academic and research staff are solicited, and their cooperation would be highly appreciated in our venture to build up a comprehensive database.

For the prescribed form, kindly write to :

M M Ansari
Joint Director
Research Cell, Economics of Education
Association of Indian Universities
AIU House, 16 Kotla Marg
NEW DELHI 110 002

TAMIL NADU VCs MEET

A conference of the Vice-Chancellors of the universities in Tamil Nadu was recently held to discuss various issues concerning universities and to suggest measures for overall improvement in the education system. Inaugurated by Dr. P.C. Alexander, Governor of Tamil Nadu, who is the Chancellor of all the universities in the State, the conference was attended by Dr. (Smt) Radha Thiagarajan, VC, Alagappa University ; Dr. S. Krishnaswamy, VC, Madurai Kamaraj University; Prof. R.M. Sethunarayanan, VC, Annamalai University; Dr. (Smt) Jaya Kothai Pillai, VC, Mother Teresa Women's University; Dr. V. Rajagopalan, VC, Tamil Nadu Agricultural University; Dr. K.M. Marimuthu, VC, Bharathiar University; Dr. S. Muthukumaran, VC, Bharathidasan University; Dr. S. Agasthialingam, VC, Tamil University ; and Dr. Sivsubramaniam, VC In-charge, Gandhigram Rural Institute, Gandhigram. Dr. H.B.N. Shetty, IAS, Special Commissioner & Secretary to Government, Education Department; Dr. P.S. Subramaniam, Director of Collegiate Education; Dr. T.R. Natesan, Director of Technical Education; Thiru V.A. Sivagnanam, Director of Non-formal and Adult Education; and Thiru M. Gopalan, Special Officer (New Universities) Education Department also attended the conference.

In his address, Dr. Alexander expressed serious concern at the falling academic standards in the Universities as reflected by the poor representation of students from Tamil Nadu in the All India Services in recent years and their inability to get into higher schools of learning like IITs, Indian Institute of Science, etc. He stated, quoting statistics, that the Tamil Nadu students fared badly in IAS, IPS, IIT and other competitive examinations which only revealed that education standards in general had suffered over a period of time resulting in serious disadvantage to the students of this state as compared to other States. He said that these should be remedied quickly after diagnosing the root cause for this malaise. He therefore exhorted the Vice-Chancellors to take urgent measures to improve the academic standards. He wondered whether the examination system needed revamping to suit the requirements of several examinations/competitive tests. The Governor also asked the Vice-Chancellors to examine whether science education had really maintained the standards expected of it.

The Governor stressed the importance of interaction of universities with industries (both medium and small scale) to enable the industries to get the benefit of research work done in universities as a problem solving device. He urged that the services of the universities should be paid for and wanted the whole thing to be institutionalised so that there was a structural arrangement for constant interaction.

He also emphasised deeper involvement of universities in rural development projects like IRDP, NREP through NSS and NAEP for economic and social development. A suggestion was made that rural development cells could be organised in each university drawing teachers from related faculties who could undertake research projects relating to rural development and also participate in several rural development programmes concerning education. The Governor advised the Vice-Chancellors to send their faculty members to the Gandhigram Rural Institute, Gandhigram to know at first hand the strategies adopted by the Institute in undertaking rural development projects.

The Governor complimented the universities for the good work done under the National Literacy Mission and suggested that they might select some villages for 100% coverage of literacy in their respective area of operation.

Referring to the autonomous colleges, Dr. Alexander wanted the Vice-Chancellors to closely monitor their programmes to see that there was academic excellence in those institutions. He emphasised the need for conducting the examinations regularly and for publication of results in time. The Governor assured the Vice-Chancellors that for all the University Grants Commission assisted schemes the State Government's share would be made available well in time.

Research Methodology Workshop

The Gujarat Vidyapith recently organised a one-week workshop on Research Methodology for the officers of the Central Board of Workers Education (CBWE). The objective of the workshop was to acquaint Board's Officers with tools and techniques of research methodology with a view to prepare them for undertaking studies relating to Workers Education both in organised and unorganised sector including rural workers.

Inaugurating the workshop, Prof. Ramlal Parikh, Vice-Chancellor, Gujarat Vidyapith and

Member, CBWE, pointed out that the workshop would be a fruitful exercise to identify areas of research as research and training are interlinked. He advised the participants to be expressive and analytical and discuss all issues threadbare so that they could apply research techniques to suit the contemporary development needs. Researchers should be able to measure the impact of every educational activity on the community.

The conceptual framework, hypothesis, types ef research, tools and techniques of data collection including sampling methods, analysis and interpretation of data, scaling methods, use of computers, were some of the topics discussed in the workshop. Areas of research were also identified for follow-up action.

Shri Navinbhai Barot, Ex-Minister of Gujarat State, who delivered the valedictory address, said that impact of any activity could not be identified in the absence of scientific research. He appreciated the efforts of CBWE in this direction for organising jointly with Gujarat Vidyapith the training course-cum-workshop for its Officers. Application of new techniques and technology advancement further emphasises the need for scientific investigation of problems, he added.

Resource Guide on Women's Studies

The Centre for Women's Development Studies, New Delhi and the Research Centre for Women's Studies (RCWS) of the SNDT Women's University propose to compile a Resource Guide providing an information base to researchers, planners, administrators, media professionals, etc. working in the field of women's development. This would greatly facilitate the identification and location of the relevant information. Several institutions around the country would be involved in the compilation of such a source. Once such a guide has been prepared by a national network, it can be easily updated by the same group, so that it becomes a dynamic instrument for better information.

The Resource Guide will be mainly in 3 parts. **Part I** would contain information about available literature on women in development (in English and other Indian languages) covering the period 1975-1990. **Part II** will consist of a Directory of various institutions involved with women's issues along with brief profile about each institution. **Part III** would give information about the expertise available in the field of women's studies in India. This will incorporate information about experts, their qualifications, specialization, etc.

IGNOU Study Centre

A study centre of the Indira Gandhi National Open University (IGNOU) was recently inaugarated at the Gorakhpur University by Dr. S.N. Chaturvedi, Director, Study Centres of the IGNOU. He said that the open university system was not just a multi media approach to teaching a distant learner, it provides an open access to higher education to all those disadvantaged groups who could not join the formal stream.

He said that the objective of the open university is to diversify and strengthen degree, certificate and diploma courses relevant to national economy and employment opportunities of our natural human resources. It seeks to democratise higher education by doing away with the conventional restrictions of place, time and entry qualifications.

Dr. Chaturvedi said that with a view to paying closer attention to students and to provide them with the facilities of communication technology such as radio and video, the Indira Gandhi National Open University has established about 100 centres all over the country.

Prof. V.D. Gupta, Vice-Chancellor, Gorakhpur University presided over the inaugural function.

Literacy March

Under the Mass Programme for Functional Literacy of the National Literacy Mission, a literacy march will be organised in Delhi on the International Literacy Day i.e. 8 September in which 10,000 students/volunteers will participate.

This was decided at a meeting of the Coordinating Committee to involve school students/volunteers in the eradication of illiteracy on voluntary basis held under the auspices of Indian Adult Education Association.

The meeting called upon the print/electronic media to join the National Literacy Mission by projecting features/fillers on liquidation of illiteracy and promotion of literacy among women in particular.

It also decided to enrol 10,000 students/volunteers from 100 schools to start with from different parts of Delhi. It is proposed to involve public schools, kendriya vidyalayas and schools managed y educational foundations like DAV, Ramjas, DTEA, etc.

The Indian Adult Education Association will coordinate and monitor the programme.

M. Phil Course in Physics

Doctor Hari Singh Gour Vishwavidyalaya proposes to start M. Phil course in Physics from the current academic session 1988-89. The admission to this course will be done through a written test. The course will consist of one compulsory paper and two optional papers out of the following fields : 1. Photonics and Modern Optics. 2. Microprocessors, 3. Dielectrics and semi-conductor Devices, and 4. Advanced Plasma Physics.

Those interested may apply for detailed information to the Head of the Physics Department, Dr. Hari Singh Gour Vishwavidyalaya, SAGAR 470003 M.P.

PAU to Open New Deptts

The Academic Council of the Punjab Agricultural University (PAU) is reported to have decided to create two new departments in the College of Veterinary Science. These are: Department of Veterinary Immunology and the Department of Veterinary Clinics and Extension Education.

News from Agril. Varsities

Jhum Control Project

The postgraduate students and faculty members of the Department of Public Administration of the North-Eastern Hill University made a study tour of the Aibawk Development Block, Aizawl District, Mizoram for an on the spot study of the administrative operation of Jhum Control Project which is being undertaken by the Government of Mizoram in collaboration with the development departments of Industries, Sericulture, Agriculture, Horticulture, Soil Conservation and Animal Husbandry and Veterinary Science. The Project aims to control jhum/shifting cultivation as well as to maintain ecological balance because it is not beneficial to the cultivators/jhumers. The Project also aims to provide the cultivators/jhumers of the Block a permanent alternative means of earning livelihood particularly in the fields of Industries, Sericulture, Agriculture, Horticulture and Veterinary, etc. The departments involved in the implementation of the Project prepare/design a variety of schemes to be undertaken by the cultivators of the Block. The Government of Mizoram provides financial assistance for the jhum families. They take up works/schemes under the joint/technical supervision of the departments involved. It being a model project of rural development experimented by the Government, its practical studies have an immense value to the students of Public Administration. Hence the visit.

During the course of their tour the students/faculty members interviewed/asked some of the beneficiaries to know how they were utilizing the Government financial assistance in taking up many schemes of permanent living in place of jhum cultivation and how far the participating departments were giving their expertise/technical assistance in carrying out their activities. They were further asked whether they were getting benefits from the schemes that they already undertook/pursued. Their reply was, to an extent, encouraging, though they pointed out some constraints of financial nature and difficulties in getting seedlings of different types in time. However, both the jhum cultivators of the Block and the participating departments are making an effort jointly and sincerely to substitute the old pattern of living jhum cultivation by the permanent means of living—forest/agro based industries, terrace/wet rice cultivation, money oriented crops, poultry/piggery, farming, etc. despite constraints.

ICAR Fellowships Raised

The Indian Council of Agricultural Research (ICAR) is reported to have revised the value of senior fellowships offered by the Council to promote agricultural research.

The amount of senior fellowship has been increased from Rs. 1,000 per month to Rs. 1,800 per month for the first two years. For the subsequent 12 to 18 months, the value of senior fellowships has been raised from the present Rs. 1,200 to Rs. 2,000 per month. In addition to the fellowships, the scholars are also given a contingent grant every year.

The ICAR every year awards several hundred fellowships for promoting agricultural education at the graduate and postgraduate levels and also for the research purposes. Junior and senior fellowships are given for studies in different disciplines of agriculture and allied subjects like animal science, fisheries, home science, agriculture, engineering and extension.

News from UGC

INSAT-1B Programme of UGC

Between 1st August to 10th Aug., 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

1.8.88

"Optical Alignment—V"
"Raw Materials—Tea"
"Blue-green Algae"

2.8.88

"Frontier Topics in Biology—Synthetic Antigens and Synthetic Vaccines"
"Telteaeh—VIII"
"Patangotsava"

3.8.88

"Respiratory Mechanisms"
"Delhi Through the Ages"
"Power from the Earth"

4.8.88

"COBOL—IX: Data Division—III"
"D.N.A."
"Rocks"

5.8.88

"Conics"
"The Whispering Brook"

6.8.88

"Design and Environment—I: Design is your Environment"
"Black Art"
"University Round Up"

7.8.88

No Telecast

8.8.88

"Light"
"Raw Materials—Phosphate"
"The Father of Green Revolution"

9.8.88

"Frontier Topics in Biology—AIDS"
"Glove Puppets"
"Teleteach—IX"

10.8.88

"Osmoregulation in Anthropods"
"Microminiatures of the Armenian S.S.R."
"Fuels"

News from Abroad

Science Consortium

Three minority colleges and national laboratories have created a science consortium to increase the number of minority scientists in the United States, as well as improve the science research capabilities of the nation's minority institutions.

The Science and Technology Alliance, designed to help meet the country's scientific needs into the 21st century, includes a historically black institution and two Hispanic colleges, one serving Mexican American and American Indian students and the other serving Puerto Rican students. The participating laboratories are part of the Department of Energy's national laboratory system.

Campuses participating in the consortium include North Carolina Agricultural and Technical State University, New Mexico Highlands University, and the Ana G. Mendez Educational Foundation in Puerto Rico. Participating Energy Department laboratories are the Sandia National Laboratory, Los Alamos National Laboratory, and Oak Ridge National Laboratory.

"Most minority students attend minority institutions of higher education," said Jose F. Mendez, President of the Ana G. Mendez Education Foundation. "Therefore if we hope to increase the number of minority scientists while also increasing the number of highly trained American scientists, the science research capabilities of minority institutions must be improved."

Minority institutions traditionally have been outside the existing network of alliances that serve major universities and research organizations, Mendez noted.

A major component of the alliance is the development of research programs and projects through collaboration between the participating laboratories and universities, Mendez said.

The alliance also recommends joint faculty appointments and exchanges at participating institutions.

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month, while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research scholars and students of education are welcome to use these resources. The Library is open from 9-00 a.m. to 5-30 p.m. Monday through Friday. Access can also be had through Inter library loan for which requisition must be made through your Librarian.

ADDITIONS TO AIU LIBRARY

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Swami Digambarji and Gharote, M.L., ed. *Gheranda Samhita.* Lonavla, Kaivalyadhama, 1978. xviii, 196p.

Swami Digambarji and Sahai, Mahajot. *Yoga kosa : Yoga terms explained with reference to context. V. 1. (2 parts).* Lonavla, Kaivalyadhama, 1985. 78p.

Swami Digambarji and others, ed. *Vasistha samhita : Yoga kanda.* Lonavla, Kaivalyadhama, 1984. 83p.

Swami Kulvalayananda. *Asanas.* Lonavla, Kaivalyadhama, 1982. 174p.

————————. *Pranayama.* Lonavla, Kaivalyadhama, 1983. viii, 140p.

————————. *Rationale of yogic poses and other articles.* Bombay, Kaivalyadhama, 1985. 68p.

———————— and Shukla, S.A., ed. *Goraksasatakam : With introduction, text, english translation, notes etc.* Lonavla, Kaivalyadhama, 1984. viii, 78p

SWAMI KUVALAYANANDA, Birth centenary (1883-1983) Souvenir. Lonavla, Kaivalyadhama, 1984. Discontd.

Tiwari. Om Prakash. *Asana why and how.* Lonavla, Kaivalyadhama, 1984. 204p.

Vedanayagam, E.G. *Teaching technology for college teachers.* New Delhi, Stering (c1983) xiv, 281p.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

HUMANITIES

Philosophy

1. Pandey, Durgadutt. *Dharam vishyak arvacheen akshepon kee sameeksha.* Avadh. Dr. Sangamlal Pandey, Prof., Department of Philosophy, Allahabad University, Allahabad.

Fine Arts

Drawing & Painting

1. Rathore, Anima. *Arambhika Mughal chitron per Irani prabhav ka swarup, 1560 se 1627 tak.* Rajasthan. Dr. C.S. Mehta, Assoc Prof., Department of Drawing and Painting, University of Rajasthan, Jaipur.

Music

1. Verma, Chaman Lal. *Mandiyali lok sangeet mein sanskritik va sangeetik vidhon ka aloechanatmak adhyayan.* HP.

Language & Literature

English

1. Birendra Kumar. *Social conflict in the novels of Mulk Raj Anand.* Magadh,
2. Chaudhary, J.C. *Dissolution of the O'Neill Hero.* Rajasthan. Dr. B.M. Singh, Department of English, Govt. College, Ajmer.
3. Koijam Ibemnugshi Devi. *T.S. Eliot as a social critic and thinker.* Manipur. Dr. N. Khagendra Singh, Department of English Language and Literature, Manipur University, Imphal.
4. Misra, Shashi. *The Raj novels of Paul Scott : The colonial experience.* Avadh. Dr. R.S. Tripathi, Reader, Department of English, Gorakhpur University, Gorakhpur.
5. Mohammad Aftab Alam. *Social philosophy in the plays of George Bernard Shaw.* Magadh.
6. Pandey, Lal Udai Bhan. *Existentialist perspectives in the novels of Anita Desai.* Avadh. Dr. Lalit Mohan Pandey K.S. Saket College, Faizabad.
7. Prasad, Satish Chandra. *The impact of psychology on the twentieth century English literary criticism.* Magadh.

German

1. Chakravorty, Badal Ghana. *The influence of English on German vocabulary as evidenced in GDR Press, 1952-72.* JNU. Prof. Pramod Talgeri, Centre of German Studies, Jawaharlal Nehru University, New Delhi.

Sanskrit

1. Ahuja, Sudesh. *Sanskrit ke pramukh mahakavyon meina uplabadh suktiyon ka adhyayan.* Rajasthan. Dr. R.C. Dwivedi Prof., Department of Sanskrit, University of Rajasthan Jaipur.
2. Mishra, Dev Narayan. *Sanskrit sahitya mein shaka stotra kavyon ka parisheelan.* Avadh. Dr. Ram Shankar Mishra, K S. Saket College, Faizabad.
3. Shukla, Jyotinarayan. *Sanskrit sahitya mein doot kavya kee parampara mein Vamanbhatt Vankrit Hansdoot.* Avadh Dr. Kripa Ram Tripathi, M.L. K.P.G. College, Balrampur.
4. Tewari, Pramila. *Hemchander krit kavyanushasan evam Bhoj krit Sarastwati Kanthamaran ka tulnatmak adhyayan.* Avadh. Dr. Madhav Raj Dwivedi, Lecturer, Department of Sanskrit, M.L.K.P.G. College, Balrampur.

Pali

1. Chattopadhyay, Bani. *Pali sahitye nari.* Calcutta.

Hindi

1. Agrawal, Shobha. *Khari Boli Ramkavya kee parampara ka sahityik mulyankan.* Durgawati. Dr. Pooran Chand Shrivastava, Prof., Department of Hindi, Teachers Colony, Cherital, Jabalpur.
2. Bijendra Singh. *Jain kavi Dhanatrai ka bhakti kavya.* Rajasthan. Dr. Ganga Ram Garg, 110 A Ranjit Nagar, Bharatpur.
3. Choudhary, P.S. *Madhyakaleen Hindi nirgun kavyadhara aur sant kavi Rajjan.* Rajasthan. Dr. Radhey Shyam, Department of Hindi, University of Rajasthan, Jaipur.
4. Dilip Kumar. *Hindi mahakavyon mein swapan manovishleshan.* Rajasthan. Dr. D.P. Gupta, Head, Department of Hindi, P.G. Dungar College, Bikaner.
5. Gayakwad, Suresh Anantrao. *The social problems reflected in the novels and stories of Jainendra.* Shivaji. Dr. S.P. Mali, Lalakar, Patnappa, Kumbharnagar, Pachagaon, Kolhapur.
6. Indora, Kiran. *Prem Chandottar upanyason mein dalit chetna.* Rajasthan. Dr. D.P. Gupta, Head, Department of Hindi, Govt. P.G. Dungar College, Bikaner.
7. Kewaliya, Pratima. *Adhunik Rajasthani upanyason mein mulya sankaraman.* Rajasthan. Dr. Brij Narain Purohit, Lecturer, Department of Hindi, Dungar College, Bikaner.
8. Meena, Jaipal. *Rajasthan ka Meena jatiya lok sahitya.* Rajasthan. Dr. Narendra Bhanawat, C-235, Dayanand Marg, Tilak Nagar, Jaipur.
9. Pathak, Manju. *Hindi laghukatha : Kathya aur shilpa : Manovaigyanik sandarbh mein.* Bhopal. Dr. Pratima Jain, Department of Hindi, Saifia College, Bhopal.
10. Rama Murthy, Karri. *A psychological study of Premchand's literature.* Andhra.
11. Salunkhe, Hindurao Gopal. *The heroines in marxist Hindi novels.* Shivaji. Dr. S.P. Mishra, 65 Tekadi Road, Sitabuldi, Nagpur.
12. Sharma, Archana. *Swatantrayottar Hindi kahanion mein anchalikta ka chitran.* Rajasthan. Dr. Ram Prakash Kulshrestha, Asstt. Prof., Department of Hindi, University of Rajasthan, Jaipur.

13. Sharma, Ram Chander. *Samkaleen alochana ke sandarbh mein Acharya Hazari Prasad Dwivedi ke alochanatmak sidhanton ka vishleshan.* Rajasthan. Dr. (Miss) Madhuri Dubey, Department of Hindi, University of Rajasthan, Jaipur.

14. Singh, Mahender Pratap. *Matiram ka saundarya bodh.* Avadh. Dr. Ram Shankar Tripathi, K.S. Saket College, Faizabad.

15. Singh, Manju. *Anchalikata kee pravritti aur Fanishwara Nath Renu ka katha sahitya.* Avadh. Dr. B.N.P. Shukla, K.N. Institute of Technology, Sultanpur.

16. Singh, Raghav Bihari. *Vishavambhar Manav: Vyaktitva evam krititva.* Avadh. Dr. Chandrika Prasad Sharma, K.S. Saket College, Faizabad.

17. Upadhyaya, Radhey Shyam. *Hindi Radio : Natya shilp.* Avadh. Dr. Radhika Prasad Tripathi, K.S. Saket College, Faizabad.

18. Yadav, Laljee. *Bachchan kavya mein saundarya aur prem.* Avadh. Dr. Ram Shanker Tripathi, K.S. Saket College, Faizabad.

19. Yadav, Madhusudan. *Hindi Sufi kavya mein bimb yojana.* Avadh. Dr. Kamalakar Pandey, K.S. Saket College, Faizabad.

Urdu

1. Jafri, Syed Yad Ali. *Zaheer dehlvi ka tanquidi mutalia.* Rajasthan. Dr. Mohammad Ali Zaidi, Assoc. Prof., Department of Urdu and Persian, University of Rajasthan, Jaipur

Bengali

1. Chakrabarti, Mamata. *Samiksha : Nareer vyaktichetana mul Ramayan Mahabharate o Rabindra kathasahitye.* Calcutta.

2. Mukherjee, Anil Kumar. *Rabindranath : Uponishader aloke.* Rabindra Bharati.

3. Roy Choudhury, Madhumita. *Rabindranather ganer bhasar sahityik mulyankan.* Rabindra Bharati.

4. Sen Gupta, Manisha. *Rabindra natake lokayat bhavana.* Rabindra Bharati.

Assamese

1. Choudhury, Jamuna Sarma. *The growth and development of Assamese short story from 1890-1940.* Gauhati. Dr. Sailen Bharali, Reader, Department of Assamese, Gauhati University, Guwahati.

2. Choudhury, Mokshadananda. *Social attitude in the Assamese short story, 1930-1975.* Gauhati, Dr. Gobindo Prasad Sarma, Department of English, Gauhati University, Guwahati.

Oriya

1. Das, Minakhi. *The women character as depicted in Oriya reeti literature.* Utkal.

2. Mishra, Renu. *Oriya Krushna sanityare reeti kabya parampara, 1550-1880.* Sambalpur. Dr. B.C. Acharya, Prof., Department of Oriya, Sambalpur University, Burla.

3. Mohanty, Rama Chandra. *The lyric poet : Abhimanyu Samantasinghar.* Utkal.

4. Nayak, Dasarath. *Sakta peetha in Ancient Orissa, upto 15th century.* Utkal.

5. Pattnaik, Soudamini. *Mahima dharma.* Sambalpur. Dr. B C. Acharya, Prof., Department of Oriya, Sambalpur University, Burla.

Marathi

1. Dolke, Lata Mahadeo. *Shridhar : Ek abhyas ani tyachya lokpriyatechi mimansa.* Nagpur. Prof. B.S. Paranjape, Hanuman Gard, Wardha.

2. Kusare, Arti Balaji. *Dalit lekhkanchi swakthane sahityaroop ani antrang.* Nagpur. Dr. V.W. Prabhudesai, Department of Marathi, Nagpur University, Nagpur.

3. Sauangikar, Tara H. *Shri V.V. Shirvadkar : Ek chikitsak abhyas, isa 1933 te 1980.* Nagpur. Dr. V.B. Prabhudesai, Department of Marathi, Nagpur University, Nagpur.

4. Shivshankar Bhatt, Divya. *Agyeya ke katha sahitya ka shaili vaigyanik adhyayan.* Nagpur. Dr. R.P. Saxena, Department of Linguistics, Foreign and Indian Languages, Nagpur University, Nagpur.

Malayalam

1. Gopinathan, A. *The mental world as revealed in the poetical works of Kumaranasan.* Kerala. Dr. M. Leelavathy, Principal (Retd), Ujjval, Cochin University, Cochin.

2. Vasanthasaghan, S.K. *Contribution of royal families to Malayalam language and literature.* Kerala. Dr. P.K. Narayana Pillay, Prof. (Retd), Department of Malayalam, University of Kerala, Trivandrum.

Telugu

1. Polayya, Sanapala. *Palagummi padmaraju gari sahiti sandarsanam.* Andhra.

2. Sujanamathi, Boppudi. *Ramadasa sahiti.* Andhra.

3. Varalakshmi, Uppala. *Telugulo Sakuntala parinayamulu.* Andhra.

Geography

1. Chaugule, Jaypal Bharama. *Eco-morphological analysis of Warana Basin : A study in regional development.* Shivaji. Dr. M.D. Tawade, Director, Department of Adult Education and Extension Work, Shivaji University, Kolhapur.

2. Hukum Singh. *Sultanpur nagariya adhyayan.* Avadh, Dr. Babban Singh, Prof., Department of Geography, K.S. Saket College, Faizabad.

3. Magar, Jayakumar Khelnath. *Impact of irrigation on agriculture in Marathwada Region : A geographical survey.* Shivaji. Dr. S.D. Shinde, Prof. and Head, Department of Geography, Shivaji University, Kolhapur.

4. Pandey, Arjun Prasad. *Sultanpur District : A study in rural geography.* Avadh. Dr. J.P. Mishra, Department of Geography, Allahabad University, Allahabad.

5. Singh, Shyam Bahadur. *Samanvit grameen vikas Tehsil Bhinga : Ek prateek adhyayan.* Avadh. Dr. Onkar Prasad Mishra, Lecturer, Department of Geography, M.L.K. College, Balrampur.

6. Tripathi, Dev Narayan. *Samanvit grameen vikas Tehsil Amethi : Ek prateek adhyayan.* Avadh. Dr. Suresh Chander Sharma, Head, Department of Geography, M.L.K. College, Balrampur.

History

1. Ambika Prasad. *Vikrmank Dev Charit : Ek itihasik adhyayan.* Avadh. Dr. Kesh Prasad Singh, Reader, Department of History, Rohilkhand University, Bareilly.

2 Banerji, Arup. *Private trade in the USSR during the new economic policy, 1921-1930.* JNU. Dr. Madhavan K. Palat, Centre for Historical Studies, Jawaharlal Nehru University, New Delhi.

3. Momin, Mignonette. *Polity and society of Assam, Circa A.D. 600-1200.* JNU. Prof. Suvira Jaiswal, Centre for Historical Studies, Jawaharlal Nehru University, New Delhi.

4. Nath, Aruna. *A study of the social changes in Assam, 1826-1900.* Gauhati. Dr. J.N. Phukan, Head, Department of History, Gauhati Universiy, Guwahati.

5. Saini, Pal Singh. *Property rights in the Dharmasastras.* Rajasthan. Dr. R.G. Sharma, Head (Retd), Department of History and Indian Culture, University of Rajasthan, Jaipur.

6. Shyam Bhat. N. *South Kanara, 1799-1860 : A study in colonial administration and regional response.* Mangalore. Dr. B Surendra Rao, Reader, Department of History, Mangalore University, Mangalore.

7. Singh, Hridaya Narayan. *Nav Sahsank charit : Ek, itihasik adhyayan.* Avadh. Dr. K.P. Singh, Reader, Department of History, Rohilkhand University, Jhansi.

8. Singh, Rajender Kumar. *Prachin Bharat mein kar vyavastha.* Avadh. Dr. Gourishankar Tewari, K.S. Saket College, Faizabad.

9. Singh, Sudha. *Prachin Bhartiya sarvajanik jeevan mein nariyon ka yogdan, prarambh se 1200 isvi tak.* Avadh. Dr. R.K. Srivastava, Lecturer, Department of History, K.S. Saket College, Faizabad.

10. Tripathi, Rajani Kant. *Vikramamkadevacarita ka samajik evam rajnaitik anusheelan.* Magadh.

11. Upadhyay, Gopal. *Baudh Kaleen Bharatiya arth Vyvastha.* Magadh.

SMT. RADHADEVI GOENKA COLLEGE FOR WOMEN

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Applications are invited for the following posts in Senior College :

1. One full time Lecturer in English (Reserved for SC/ST only).
2. One full time Lecturer in Home Science (Food & Nutrition) (Reserved for SC/ST only).
3. One full time Lecturer in Bio-Chemistry.
4. One part time Lecturer in Sanskrit (Likely to be full time).

Qualifications

(i) M. Phil/Ph. D. with atleast IInd Dn. at Master's degree level in the concerning subject.

OR

(ii) High IInd Class 54% and above at Master's degree level and IInd Class at Graduate level.

OR

(iii) IInd Class at Master's degree level and Ist Class of graduate level.

Candidates not holding M. Phil/ Ph.D. Degree if selected and appointed on a clear vacancy post will have to acquire the same within a period of eight years. The appointment of the candidates will be subject to the approval of Amravati University.

Pay Scales : As per U.G.C./Government Rules.

In case of non-availability of suitable B.C. candidates, the posts will be filled in from open category candidates purely on temporary basis in accordance with University direction No. 3 of 1988, dated 2-3-1988.

Note : 1. Women candidates will be preferred.

2. Prescribed application form can be had from the College office on payment of Rs. 10/- (Rs. 5/- for B.C. candidates) by cash.

3. Candidates if called for interview will have to attend at their own cost along with original certificates, testimonials and statement of marks.

4. Complete application form along with true and attested copies of certificates, testimonials and statement of marks in duplicate should reach the College office on or before **15-8-1988**.

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NORTH-EASTERN HILL UNIVERSITY

BIJNI COMPLEX, LAITUMKHRAH SHILLONG

Applications are invited from candidates holding M.Sc. degree in Chemistry/Physical Chemistry with first class or High Second Class (with at least 55% Marks or B+ in the grade system) for the position of a Junior Research Fellows. (Rs. 800/- p.m. (fixed) plus permissible H.R.A. for the first two years) to work in a CSIR Sponsored Research Scheme, "Studies on Polyelectrolytes based Ultrafiltration in Removing Multivalent metalions from Waste Water" under the supervision of Prof. S.N. Bhat. The Research Scheme is initially for 3 years.

The application containing the date of birth and academic biodata should reach Prof. S.N. Bhat, Department of Chemistry, North Eastern Hill University, Bijni Complex, Laitumkhrah, Shillong-793003 on or before **August 31st 1988**. The candidates should arrange to send two reference letters from the teachers directly to the investigator.

CLASSIFIED ADVERTISEMENTS

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AMRITSAR
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Advt. No. 4/88

Applications are invited for the following posts on prescribed form obtainable at a price of Rs. 2/- from the office of the Registrar by making a written request accompanied by self-adressed Rs. 1.40, stamped envelope of 23×10 cms so as to reach this office by **8.8.1988** alongwith crossed Indian Postal Order(s) of Rs. 10/- for posts at Sr. No. 1 to 49 and Rs. 5/- for others (non-refundable) drawn in favour of the Registrar, Guru Nanak Dev University, Amritsar.

Persons already in employment must send their applications through their employer. Candidates from within India may not be considered in absentia. Higher start in the grade may be given depending upon qualifications and experience.

The qualifications for the posts of Professors, Readers and Lecturers will be those as prescribed by the University Grants Commission and approved by the State Govt. from time to time.

PROFESSORS : (Grade : Rs. 4500-7300)

1.	Sociology	2
2.	Business & Commerce	1
3.	Electronic & Technology	2
4.	Sanskrit	1
5.	Director (Grade : Rs. 1500-2500) (U.G.C.) for Academic Staff College).	1

READERS : (Grade : Rs. 3700-5700)

6.	Business & Commerce	1
7.	History & Archaeology	1
8.	Sociology	1
9.	English (for Regional Centre, Jalandhar).	1
10.	Sanskrit	1
11.	Chemistry	2
12.	Electronic & Technology	2
13.	Physics	1
14.	Phy. Edu (T)	1
15.	Academic Staff College (Grade : Rs. 1200-1900 (U.G.C.)	1
16.	Mathematics	1
17.	Archivist 1 (Grade : Rs. 1200-1900) (for Archival Cell History Deptt.)	
18.	Psychology	1

LECTURERS : (Grade : Rs. 2200-4000)

19.	Psychology (one Temporary)	2
20.	History & Archaeology	1
21.	English (Regional Centre, Jalandhar)	1
22.	Business & Commerce (for Diploma in Business Management & Marketing Management).	2
23.	Biology	1 (Adhoc)
24.	Biology (One Curator-cum-Lecturer and one Lecturer in Food and Microbial Technology (J.O.C.)	2
25.	Persian	1
26.	Mathematics	3 (1 Temporary)
27.	Computer Science	1 (J.O.C.)
28.	Chemistry	3
29.	Political Science	3
30.	Architecture	2
31.	Sanskrit	1
32.	Library Science	1
33.	Laws (for University Campus)	1
34.	Punjabi (for Regional Centre, Jalandhar)	1
35.	Physics	2 (J.O.C.)
36.	Sociology	2
37.	Academic Staff College (Grade : Rs. 700-1600 (U.G.C.)	1
38.	Electronic Technology	2
39.	English (Temporary but likely to continue)	1
40.	Physics (for Diploma in Renewable Energy Sources (DRES) (JOC)	2
41.	Physics 1 Part time (Rs. 600/- P.M. fixed) (JOC)	
42.	Punjabi (for G.N.D.U. College, Jalandhar)	1
43.	Executive Engineer (Grade : 1400-2100)	1
44.	Assistant Director Physical Education (Campus) Grade 700-1600	1
45.	Director, Physical Education (Grade : Rs 700-1600) (University College, Jalandhar).	1
46.	Assistant Librarian (Grade : Rs. 700-1600 U.G.C.)	1
47	Farm Manager (Grade : Rs. 825-1580)	1
48.	Publication Officer (Grade : Rs. 700-1300 U.G.C.)	1
49.	Assistant Archivist (Grade : Rs. 700-1600 U.G.C.) for Archive Cell).	1
50.	Technical Assistant Grade III (Electronics) (Grade : Rs. 750-1300) (for Chemistry Deptt.)	1
51.	Dispensor-cum-Pharmacist (Grade : 510-940)	1
52.	Steno-Typists (English) (Grade : Rs. 400-600+Rs. 25/- S.P.)	

Qualifications/Specialisations

Sr. No. 1 : 1st Post : Open.

For IInd Post : Political Sociology.

Sr. No. 2 : In any area of Business Management, Commerce and allied fields.

Sr. No. 3 : Essential : Master's Degree in Electronics and Communication Engineering with specialisation in any of the following :

(a) Communication Systems.
(b) Instrumentation.
(c) Circuits and Systems.
(d) Computers/Microprocessors.

Desirable : Ph.D. in Electronics and Communication.

The candidate should possess ten years' experience of teaching and/or research and / or guiding research at Doctoral level or an outstanding Scholar with established reputation who has made significant contribution to knowledge.

OR

An eminent scholar with published work of high quality; actively engaged in research. Ten years' experience of teaching and/or Research. Experience of guiding research at Doctoral level or an outstanding scholar with established reputation who has made significant contribution to knowledge.

Sr. No. 4 : Specialization in Vedic Literature/Pali. Prakrit.

Sr. No. 5 : First or high second class Master's degee; 10 years experience in colleges/universities ; experience of conducting workshops/orientation courses.

Desirable : Ph.D. or published research work of high standard. Bachelor's/Master's Degree in Education.

Sr. No. 6 : In any area of Business/Commerce/Allied Fields.

Sr No. 9 : Modern American Fiction.

Sr. No. 10 : (i) Specialization in Veda/Puran/Ancient Indian Cultural History/Indian Philosophy/Linguistics.

(ii) An eminent Scholar well-versed in Manuscriptology/epigraphy will be preferred.

Sr. No. 11 : Analytical/Organic/Physical/Inorganic.

Sr. No. 12 : Essential

(i) Ph.D. Degree in Electronics and Communication Engg./Electrical Engg. with minimum experience of 3 years in teaching and/or research in a University and/or institute of repute.

OR

First class Master's degree in Electronics and Communication Engg./Electrical Engg. with minimum 5 years experience in teaching and/or research in a University and/or Institute of repute.

(ii) Specialised knowledge in Instrumentations / Computer Technology/ Communication Engg./Control Systems.

Sr. No. 13 : (i) Solid State Physics.
(ii) Theoretical Physics.
(iii) Radiation Physics.

Sr. No. 14 : (A) Specialisation

Specialisation in Physiology of Exercise (Exercise Physiology)/Sports Medicine/Sports Psychology/Sports Sociology/Sports Kinanthropometry/Research Methodology in Physical Education and Sports.

(B) Preferable

1. Guiding research work for M.P.Ed./M.Phil/Ph.D. students in Physical Education.
2. Teaching experience in a University Teaching department / College of Physical Education for at least 8 years.
3. Publication of a "Text Book"/Research articles in reputed National or International Journals.
4. Achievements in Sports/Games at the all India Inter University and above levels.
5. Administrative experience as Chairman/Head of Department of Physical Education in a University/Principal of a College of Physical Education/College.

Sr. No. 15 : Essential

First or High Second class Master's Degree, Ph.D. in Education/Psychology.

10 years experience in college/university.

Desirable : Experience of conducting workshop, orientation courses/or of working as resource-person for Seminars, workshops/Orientation courses.

Sr. No. 16 : In the Thrust Areas Operational Research and Computer Mathematics.

Sr. No. 17 : (i) At least 2nd Class Master's degree in History with an optional paper in Indian History of post-1600 period from a recognised University.

(ii) Preferably, Diploma in Archival studies or Certificate course in Archival Administration and record Management.

(iii) Experience of editing historical documents.

Sr. No. 18 : Psychometrics/Cognitive Psychology/Experimental Psychology.

Sr. No. 19 : 1st Post : Open

2nd Post : Cognitive / Motivation/ Experimental / Physiological/ Developmental and Industrial Psychology.

Sr. No. 21 : Linguistics.

Sr. No. 22 : In any area of Business/Commerce/Allied fields.

Sr. No. 23 : Molecular Biology, virology or any other discipline of Modern Biology.

Sr. No. 24 : Curator-cum-Lecturer
Ph.D. with specialisation in Taxonomy and Systematics of plants.

Lecturer in Food and Microbial Technology (JOC)
Ph.D./M.Tech Biochemical Engineering or Microbial Biotechnology.

Sr. No. 26 : In the Thrust Areas Operational Research and Computer Mathematics (for two Posts and one temporar open).

Sr. No. 27 : A Doctorate degree i Computer Science or in any relevan Branch of Science or Engineering wit some teaching and research in Computer Science.

OR

M.Tech. with one year or M.Phil. with two years experience in teaching or research in Computer Science subjects. These qualifications may be relaxed if no suitable person is available.

Sr. No. 28 : For Two Posts: Analytical Chemistry

For One Post : Bio-inorganic/Inorganic/Organic.

Sr. No. 29 : For 1st Post : Adequate knowledge of Research Methodology and Theory of Comparative Politics.

For 2nd Post: Adequate knowledge of Political Theory.

For 3rd Post ; Open

Sr. No. 30 : Essential
Bachelor in Architecture (B. Arch.), B.E. or B. Tech. in Civil Engineering from a recognised institution.

Desirable :

(i) Master in Architecture/M.Tech. in Structures.
(ii) Professional/Teaching experience.
(iii) Associate Membership of a Professional Body.

Sr. No. 31 : M.A. Skt./Pali/Prakrit. Specialization Linguistics.

Sr. No. 32 : Specialization in Computer Science.

Sr. No. 33 : Specialization in the field of "Mercantile Law" with sound knowledge in the law of Insurance and Law of Industry and Business Management at the LL.M. level and Diploma in labour law. Proficiency in Panjabi language will be preferred.

Sr. No. 34 : Linguistics / Linguistic study of folklore OR culture.

Sr. No. 35 : Post (1) Essential
M.Sc./M.Tech. in Applied/Exploration Geophysics.

Desirable : Some Teaching/Resear-/Field experience.

st (2) Essential

M.Sc. Physics / Applied Physics/ eology/Chemistry preferably followed y Ph.D. with specialisation Nuclear/ xploration Geophysics.

Note : For post No. 1 if a person ith M.Tech. degree in Applied/Exploation Geophysics is not available, the ost will be filled with qualifications as rescribed for post No. 2.

Sr. No. 36 : Ist Post : Industrial Sociology.

IInd Post : Social Statistics.

Sr. No. 37 : Essential
First or high second class Master's degree; Ph.D. in Education/Educational Psychology or in any subject with M.A. (Psychology)/M. Ed., as additional qualification.

Desirable : Specialization in Educational Technology.

Sr. No. 38 : Master's degree in Biotechnology/Chemical Engineering. In case suitable candidates with Master's degree are not available or found unsuitable first class B.Tech./B.E. in Biotechnology/Chemical Engineering will be considered. However, they will have to obtain Master's degree in the relevant field within five years.

Sr. No. 40 :

(a) Solar radiation measurement.
(b) Solar energy utilization.
(c) Photo-Voltaic System.
(d) Solar cells/thin films.

Sr. No. 41 : (a) Bio-chemistry.
(b) Bio-technology

Sr. No. 43 : Degree in Civil Engineering from a recognised Indian University or equivalent, at least five years experience as Sub Divisional Engineer in a Government department or in a similar position in a private undertaking. Diploma holders with 10 years experience as S.D.E. may also apply.

Sr. No. 44 : (i) Master's degree in Physical Education (High Second class) with Diploma in Sports coaching from a recognised Institution.

OR

A Master's degree in Physical Education (High Second Class) with a record of having represented his University at the Inter University level/State in the National Championship.

(ii) Experience in organising games and sports (as exemplified in handling of about a dozen teams in a year in his Institution and their participation in University/Inter Collegiate tournaments) and ability to encourage mass participation in games and sports.

(iii) Preferably having teaching experience of post-graduate classes.

Sr. No. 45 : (i) Master's degree in Physical Elucation (High Second Class) with diploma in sports coaching from a recognised institution.

OR

A Masters's degree in Physical Education (High Second Class) with a record of having represented his University at the Inter University level/State in National Championship.

(ii) Experience in organising games and sports as exemplified in handling of about a dozen teams in a year in his Institution and their participation in University/Inter Collegiate tournaments) and ability to encourage mass participation in games and sports. The candidate should be male and should have passed M.P.Ed. in Ist Division and possess atleast five years experience and should have participated in Inter-State/Inter-University in Volleyball/Table Tannis/ Badminton/Cricket.

Sr. No. 46 : (i) Good academic record with atleast a high secord class Master's degree in a subject other than Library Science.

(ii) Master's degree in Library Science with First or High 2nd Class.

Sr. No. 47 : (i) B.Sc. Agriculture with 5 years experience as an Agriculture Inspector. Retired persons with the above qualifications may be considered for term appointment.

(ii) Qualifications may be relaxed in case of candidates having experience of Farm Management.

Sr. No. 48 : (i) First or Second Class Master's Degree from a recognised University.

(ii) Ten years experience of Printing and Publishing.

(iii) Proficiency in Languages particularly English, Punjabi and Hindi.

Sr. No. 49 : (i) Second class Master's degree in Modern Indian History of a recognised University or equivalent.

(ii) Preferably diploma in Archival studies or certificate course in Archival Administration and record Management.

(iii) About 2 years experience of Research or teaching in Modern History to University classes or about 2 years experience of work in Govt. record office.

Sr. No. 50 : Higher Secondary with three years' Diploma of electrical/electronics with 10 years' experience or degree in electronics or M.Sc. with sufficient theoretical and practical knowledge of instruments used in chemical Laboratory i.e. NMR, IR, ESR, Atomic Absorption Spectrophotometer/Polerograph Analyser/CHN Analyser etc.

Sr. No. 51 : Matric, Diploma in Pharmacy registration with Punjab Pharmacy Council and minimum two years experience in a Govt. or semi-Govt. hospital. Knowledge of Punjabi upto Matric standard.

Sr. No. 52 : (i) Graduate or Second Class intermediate/B.A. Part-I or First Class Matriculation of a recognised University or its equivalent.

(ii) 80 W.P.M. speed in shorthand to be transcribed at the speed of 15 W.P.M. with 92% accuracy.

(iii) Knowledge of Punjabi upto Matric standard.

Note : Those who have already applied in response to our previous advertisements, should apply afresh.

Candidates belonging to Scheduled Castes/Backward classes of Punjab State when called for interview will be paid travelling allowance according to University rules.

K. S. Thind
REGISTRAR

REGIONAL ENGINEERING COLLEGE

SILCHAR (ASSAM) 788 010.

Advertisement No. 1/88

Dated : the 12th July, 1988.

Applications are invited for the following Posts :

1. Professor of Computer Science—1/ Electronics—1/ Electrical Engg.—1/ Applied Mechanics-1
2. Asstt. Professor of Applied Mechanics/Civil Engg.—2/Mechanical Engg. —2/Electronics, Electrical and Computer Science—5/Chemistry—1
3. Lecturer of Civil Engg.—2/Applied Mechanics—1/Electrical, Electronics and Computer Science-4
4. Registrar—1
5. Librarian—1
6. Assistant Librarian—1

Scale of Pay :

1. Professor—Rs. 1500-60-1800-100-2000-125/2-2500/- P.M. (Un-revised)
2. Asstt. Professor—Rs. 1200-50-1300-60-1900/-P.M. (Un-revised)
3. Lecturer—Rs. 700-40-1100-50-1600/- P.M. (Un-revised)
4. Registrar—Rs. 3000-100-3500-125-4500/- P.M. (Revised)
5. Librarian—Rs. 2200-75-2800-100-4000/- P.M. (Revised)
6. Asstt. Librarian—Rs. 650-30-740-35-810-EB-35-880-40-960/- P.M.

Requisite Qualification and experience for the Post of Professor :

An eminent Scholar with published work of high quality in the appropriate field actively engaged in research. Ten years experience of teaching and/or research. Experience of guiding research at doctoral level.

Or

An outstanding Engineer/Technologist with established reputation who has made significant contribution to knowledge.

Requisite Qualification and experience for the Post of Assistant Professor in Engineering :

A good academic record with a Doctor's Degree in a relevant field. At least 5 (five) years experience of teaching and/or research and development provided further that candidates not possessing Ph.D. may be considered if they have to their credit equivalent research published work or design/ development work of a high order either in the institution or in an Industry.

Or

In the case of persons to be recruited from Industry on professional fields candidates should possess good academic record with recognised professional work of about 7 (Seven) years which should include innovation/or research and development.

Requisite Qualification and experience for the Post of Asstt. Professor, Chemistry :

Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) Research or (ii) innovation in teaching methods or (iii) Production of teaching meterials.

About five years experience of teaching and/or Research provided that at least three of these years were as a Lecturer or in an equivalent position.

This condition may be relaxed in the case of candidates with outstanding research work.

Requisite Qualification and experience for the Post of Lecturer in Engineering :

(i) Master's degree in appropriate field in Engineering/Technology.

(ii) Consistently good academic records with a Bachelor's degree in Engineering/Techology. First class at Bachelor's degree and/or Master's degree level.

(iii) One year relevant professional experience out side academic/research Institutions.

Having regard to the requirement of the emerging fields of Engineering and developing inter disciplinary programmes the requirement of Engineering/Technology degree may be waived in the cases of otherwise well qualified candidates.

Provided further that if a candidate does not possess Professional experience or a candidate possessing experience is not found suitable, the person appointed will be required to obtain desired professional experience within a period of 5 (Five) years of appointment, failing which he/she will not be able to earn further increments until he/she fulfil the requirement.

Provided further that if candidates with Master's degree qualifications are not available or are not found suitable for appointment essential qualification may be relaxed and first class engineering graduates may be considered for appointment against the post of Lecturer. Such relaxation will be subject to the condition that the candidates concerned shall have to obtain M.Tech./ M.E. degree within a period of 5 (Five) years failing which they shall not be entitled for drawing further increments.

Specialisation : In any one or more of the following fields :

Professor in Electronics Engg. : (i) Communication Engg., (ii) Microwave Engg.

Professor in Computer Science & Engg. : (i) Artificial Intelligence and expert systems, (ii) Pattern recognition & Image Processing, (iii) Computer Architecture & Parallel Processing, (iv) Computer Network.

Professor in Electrical Engg. : (i) Electrical Machines, (ii) Electrical Power systems, (iii) High Voltage Engg. (iv) Machine drives.

Professor in Applied Mechanics : Stress Analysis/Fluid Mechanics.

Asstt. Professor Civil Engg. : Structural Engg./Surveying / Transportation Engg./Soil Mechanics and Foundation Engg.

Asstt. Professor Chemistry : Inorganic/Physical/ Organic / Analytical Chemistry.

Asstt. Professor in Electrical Engg. : (i) Electrical Machines, (ii) Electric Power Systems, (iii) Electric drives, (iv) High Voltage Engg.

Asstt. Professor in Eletronics Engg. : (i) Communication Engg., (ii) Microwave Engg., (iii) Electronic Circuits and Devices, (iv) VLSI technology.

Asstt. Professor in Computer Science & Engg. : (i) Artificial intelligence and expert system, (ii) Pattern Recognition & image Processing, (iii) Computer architecture and parallel processing, (iv) Computer network, (v) M.Sc. in Mathematics with experience in software development and system programming.

Asstt. Professor in Applied Mechanics : Structural Mechanics/Structural dynamics/Vibrations/Fluid Mechanics.

Asstt. Professor in Mechanical Engg. : Heat Power/Production/Design/Industrial Engg.

Lecturer in Electrical, Electronics & Computer Science & Engg. : Any specialization in the respective branch will do.

Lecturer in Civil Engg. : Any specialization other than structural Engg.

Lecturer in Applied Mechanics : M. Tech. in Structural Engg. or Water Resources Engg. or 1st class B.E./B. Tech. in Civil Engg. with Elective in Structural Engg./Water Power Engg./Water Resources Engineering.

Requisite Qualification and experience for the Post of Registrar

Essential : A Bachelor's degree in Arts, Science, Commerce, Engineering or technology with at least 10 (Ten) years experience in responsible administrative post in any Govt. Department, University or a College.

Desirable : A good knowledge in academic affairs and accounting procedure in an established educational Institution of degree level.

Requisite qualification and experience for the post of Librarian

Essential : A Master degree in Arts, Science or Commerce with degree in Library Science.

Desirable : 5 (Five) years experience in Library preferably technical Institute in a responsible position.

Requisite qualification and experience for the post of Asstt. Librarian

A Bachelor degree in Arts, Science or Commerce with a degree in Library Science. Candidates having experience in the Library of technical Institute with knowledge of keeping accounts will be preferred.

Age : Not less than 18 years and not more than 30 years an on 1-10-88. Upper age limit may be relaxed in case of exceptionally experienced candidates.

Application in plain paper (Typed) giving full Bio-data, Date of Birth, Address for correspondence, Permanent Address, Particulars of publications (in case of teaching post) and details of present emoluments showing the Pay-Scale, Present Basic Pay, D.A. and other allowances together with a recent Passport size Photograph and Indian Postal Order of Rs. 10/- (Rupees Ten) and Rs. 5/- (Rupees Five) only for the candidates belonging to S.C./S.T. should reach **the Principal and Secretary, Regional Engineering College, Silchar-788 010, Dist. Cachar, Assam by 12th August, 1988.**

Total emoluments of a teacher at the minimum of the Scale including H.R.A. will be as follows :

(i) Professor	:	Rs. 3840/-
(ii) Asstt. Professor	:	Rs. 3450/-
(iii) Lecturer	:	Rs. 2396/-

The Authority reserves the right to increase or decrease the number of posts, to fill-up or not to fill-up the posts/or to call only selected candidates for interview.

The persons who are in service should apply through proper channel.

Number of teaching posts in each category would be decided according to the requirement.

The candidates who applied for the post of Professor, Applied Mechanics earlier against our Advertisement No. 4/87 need not apply afresh.

A candidate if not found suitable for the post he applied-for may be considered for the lower post, if vacancy exists.

For the post of Professor 1st class Railway fare and for the post of Registrar, Librarian, Asstt. Professor, Asstt. Librarian and Lecturer 2nd class Railway fare by the shortest route will be admissible to the candidates for up and down journey for appearing in the interview. D.A. not admissible.

H. Bhaumik
PRINCIPAL & SECRETARY

THE UNIVERSITY OF KASHMIR

HAZRATBAL, SRINAGAR

Brief Advertisement Notice

Applications on prescribed form which can be had from the University Office on payment of Rs. 25/- accompanied by a Postal Order/Bank Receipt/Bank Draft for Rs. 10/- both drawn in favour of the Registrar of this University cashable at Srinagar to reach the University Office by **9.8.1988** are invited for the following posts available in the Department of Sociology :

1. Professor in the pay scale of Rs. 4500-150-5700-200-7300
2. Reader in the pay scale of Rs. 3700-5300
3. Lecturers in the pay scale of Rs. 2200-75-2800-100-4000.

The appointees shall also be allowed D.A. and Medical Allowance as admissible under rules.

The essential qualifications for the posts shall be same as prescribed by the University Grants Commission.

The desirable qualification for the posts of Reader is "Specialisation in Research Methodology and/or Applied Sociology".

Requests for issuance of the set of application forms should accompany a self-addressed envelope (5"×11") in size with the postage of Rs. **3.80 paise.**

Candidates are advised, in their own interest, to send six copies of their detailed curriculum vitae in advance. However, applications not received subsequently on prescribed forms will not be considered. **Any application received beyond due date will also not be considered.**

Any of the qualifications/experience may be relaxed at the discretion of the University.

S. D. Qureshi
DEPUTY REGISTRAR ADMN.

GULBARGA UNIVERSITY

Administrative Office 'Jnana Ganga', Gulbarga

No. GUG.ADM.EST.(T) 88-89/1038 **Dated : 11-7-88**

NOTIFICATION

Applications in the prescribed form in EIGHT Sets are invited from the qualified candidates of Indian Nationality for the following teaching posts in the Gulbarga University so as to reach the Registrar, Gulbarga University, Gulbarga-585 106, on or before **6th August, 1988** along with the Indian Postal Order/DD/Bank Challan for Rs. 24/- in favour of Gulbarga University, Gulbarga.

If suitable persons belonging to Scheduled Caste and Scheduled Tribe or other Backward Classes are not available for being selected for the vacancies reserved for these categories, such vacancies will be filled-up by selection of candidates from other reserved or General Merit categories as per Government Orders.

Sl. No.	Post-Graduate Department SUBJECT	No. of Vacancies	Classification
1.	**Physics**		
	Reader	2	SC 1, ST 1.
	Lecturer	3	SC 1, ST 1, GM 1.
2.	**Mathematics**		
	Lecturer	4	ST 1, Gr A-1, B-1, SC 1
3.	**Statistics**		
	Reader	1	SC–1
	Lecturer	2	SC 1, ST 1
4.	**Library & Information Science**		
	Reader	1	SC–1
	Lecturer	1	SC–1
5.	**Economics**		
	Professor	1	SC–1
6.	**History**		
	Lecturer	1	SC–1
7.	**Applied Electronics**		
	Lecturer	1	SC–1

* Scale of Pay as per U.G.C.

Note : Application forms along with the details containing prescribed qualification, Pay Scales etc., will be supplied along with application forms. Those who are desirous of obtaining application forms by post should send DD for Rs. 24/- drawn in favour of Gulbarga University, Gulbarga with a requisition and self-addressed cover measuring 20 × 10 cms. duly affixing postal stamp of Rs. 6/-.

REGISTRAR

UNIVERSITY OF JAMMU

VACANT FACULTY POSITIONS

Applications on the prescribed form obtainable from the University Office are invited for the following vacant posts so as to reach the undersigned on or before **31st August, 1988.**

1. **Professors** : (Rs. 4500-7300), Political Science (Comparative Politics including Comparative State Politics in India also) (lien bound vacancy but likely to be lien free) (One post), Laws (One post), Chemistry (Physical) (One post).

Librarian-cum-Professor : (Rs. 1500-2500 pre-revised) (One post).

Readers : (Rs. 3700-5300) English (One posts), Hindi (One post), Management Studies (Two posts), Economics (Macro-Economics) (One post,) Laws (One post), Physics (High Energy Physics)(One post), Computer Science (One post), Statistics (Econometric/Statistical quality control) (One post), Commerce (Correspondence Education) (One post).

4. **Lecturers** : (Rs. 2200-4000), English (One post), Management Studies (Finance and Accounting, Industrial and Commercial Laws, Human Resources Management) (Three posts), Political Science (Political Philosophy, Comparative Politics / Public Administration), (Two posts) Library Science (Information Technology and Information Retrival) (One post), Laws (One post), Geography (Remote Sensing and Air Photo Interpretation) (One post), Home Science (Developmental Psychology/Child Development) (Two posts), Statistics (Demography/Statistical Inference/Design of experiments/probability Theory / Computer Science/Survey Sampling) (Two posts), Urdu (Correpsondence Education) (One post), Physics (Electronics, High Energy Physics) (Two posts).

5. **Electronic Engineer** : (Rs. 700-1300) (One post) and Research Associate (Rs. 1400/upto Rs. 2000/-) (Consolidated), Physics Department.

Prescribed application forms and other details can be had from Shri Vachaspati Sharma, Assistant Registrar (Forms and Stationery) by sending a self-addressed envelope (25 cms × 10 cms) bearing postage stamps worth Rs. 10/- alongwith crossed postal order worth Rs. 20/- drawn in favour of the Registrar, University of Jammu, Canal Road, Jammu (Tawi)-180001 cashable at Jammu Post Office.

Ram Sarup
REGISTRAR

JADAVPUR UNIVERSITY

CALCUTTA-700 032.

Employment Notification

No. A2/C/12/88

Dated : 8th July, 1988.

The University invites applications in the prescribed form for the following posts :

A. 1. Professor : Electrical Engineering : Two posts

Scale of Pay : Rs. 1500-60-1800-100-2000-125/2-2500/-

Qualifications : Essential

An eminent scholar with published work of high quality actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding Engineer/Technologist with established reputation who has made significant contribution to knowledge.

Specialisation

Electrical Machines : One post

Electrical Measurement & Instrumentation : One post

Desirable

Specialisation : Electrical Machines :

(i) Experience in developing Drive Systems

(ii) Experience in teaching of 10 years of which 5 years in the post-graduate level of Electrical Machines and guiding research

Specialisation : Electrical Measurements & Instrumentation :

(i) Experience in research on Microprocessor and Computer based Instrumentation/Standardisation.

(ii) Experience in research on Biomedical Instrumentation.

(iii) Experience in teaching of 10 years of which 5 years in the post-graduate level and research guiding.

2. Reader : Electrical Engineering : Two posts (likely to increase)

Scale of Pay : Rs. 1200-50-1300-60-1900/-

Qualifications : Essential

Good academic record with a Doctor's degree in a relevant field. About 5 years' experience of teaching and/or research and development.

Provided further that candidates not possessing Ph.D. may be considered if they have to their credit equivalent research published work or design/development work of a high order either in the Institution or in an Industry.

OR

In the case of persons to be recruited from industry or professional fields, candidate should possess good academic record with recognised professional work of about 7 years which should include innovation and/or research and development.

Specialisation :

Electrical Machines/Control Systems/Power Systems / Measurement and Instrumentation/High Voltage Engineering.

Desirable :

1. 4 years teaching experience in relevant fields of specialisations of which 2 years must be in the post-graduate level.
2. Experience in Laboratory development.

B. Part-time Lecturers for Post-Graduate Evening Courses of the University for the following departments :

(a) History —One post
Specialisation : South East Asian History (modern period)

(b) Sanskrit —Three posts
Specialisation :
(i) Vedic Studies
(ii) Nyaya
(iii) Literature Poetics

(c) Library Science —Two posts
Specialisation : Library Science

(d) Bengali —Two posts
Specialisation :
(i) Bengali of Modern Literature
(ii) Modern Fiction.

(e) Physical Chemistry—Three posts
Desirable—PG Teaching Experience for two years or more.

Qualifications : Essential

(a) A Doctor's degree or research work of an equally high standard; and

(b) Good academic record with at least second class Master's degree in a relevant subject from an Indian University or an equivalent degree from a foreign university.

Having regard to the need for developing interdisciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

Provided that if the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a good academic record, weightage being given to M.Phil. or equivalent degree or research (work of quality) may be appointed provided he has done rerearch work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research of high standard within eight years of his appointment, failing which he will not be able to earn future increment until he fulfils these requirements.

Explanation

For determining "good academic record" the following criterian shall be adopted.

University Lecturer

(i) A candidate holding a Ph.D. degree should possess at least a second class Master's degree; or

(ii) A candidate without a Ph.D. degree should possess a high second class Master's degree and second class in the Bachelor's degree; or

(iii) A candidate not possessing Ph.D. degree but possessing second class Master's degree should have obtained first class in the Bachelor's degree.

Persons having secured marks more than the mid point **of the prescribed minimum marks for passing an examination in the second division and the prescribed minimum marks for passing an examination in the first division by a University shall be deemed to have passed that examination in the high second class.**

All Part-time teachers are to take 4 period a week at a honorarium of Rs. 50/ per lecture period.

Age : Not exceeding 60 years.

Last date of receiving applications for Group A is **2.8.1988** and for Goup B is **18.8.1988**.

Application forms are obtainable from the University Office during working hours on payment of Rs. 2/- or by post on payment of Rs. 3/- inclusive of postage. Higher initial salary (for Gr. A) may be given to really deserving candidates Those who are in employment should submit their applications through proper channel. No travelling allowance is admissible to candidates called for interview. Choice of Selection Committee will not necessarily be confined to applicants only. Canvassing in any form will disqualify a candidate. Applications received after the prescribed **LAST DATE** will not be considered.

REGISTRAR

P.S.M. COLLEGE KANNAUJ

Wanted a lecturer in education in the Scale Rs. 2200-4000 on ad-hoc basis till 27.1.1989 (likely to continue) or till an appointee of U.P. Higher Education Service Commission joins.

The application should reach the College office latest by 07.8.88 and attend interview on 14th Aug. 88 in the College at 01 P.M. The prescribed application form alongwith prescribed qualification is available in the College office on payment of Rs. 21.00.

Dr. P.N. Tandon
SECRETARY

ATMA RAM SANATAN DHARMA COLLEGE

(UNIVERSITY OF DELHI)
DHAULA KUAN
NEW DELHI-110021.

Telephone : 673436

Applications in the prescribed proforma obtainable from the College office on request, or by sending self-addressed stamped envelope (23 cm×10 cm), are invited for the following posts of Lecturers, in the grade of Rs. 2200-75-2800-100-4000 and usual allowances as per the University of Delhi rules :

I. 1. Physics : 1 (Leave Vacancy)
 : 1 (Part-Time)
 2. Mathematics 1 (Temporary for one year)
 3. Commerce : 1 (Leave Vacancy)
 4. Economics : 3 (Leave Vacancies)
 5. Political Science : 1 (Part-Time)
 6. Hindi : 2 (Leave vacancies)
 7. Sanskrit : 1 (Temporary for one year/Part-Time)

II. Director of Physical Education : 1 (Permanent)

Qualifications : For lecturers' posts listed at 1 to 7.

(a) A Doctorate degree or research work of equally high standared; and

(b) Good academic record with at least Second Class (C in the seven point scale) Master's degree in a relevant subject from an Indian University or an equivalent degree from a foreign University.

Having regard to the need for developing inter-disciplinary programmes, the degree in (a) and (b) above may be in relevant subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his or her thesis or from his or her published work is of a very high standard, it may relax any of the qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed on the condition that he/she will have to obtain a Ph.D./M.Phil / M.Litt degree or give evidence of research of high standard within a period of fourteen years or till he/she reaches the stage of Rs. 3400/- in the pay-scale, whichever is earlier, from the date of his/her appointment. Failing this he/she will not be able to earn future increments until he/she fulfils these requirements.

For determining "good academic record" the following criteria shall be adopted :

(a) A candidate holding a Ph.D./M.Phil degree should possess at least a second class Master's degree; or

(b) A candidate without a Ph.D / M.Phil degree should possess a High Second Class Master's degree and second class in the Bachelor's degree; or

(c) A candidate not possessing Ph.D./M.Phil degree but possessing second class Master's degree should have obtained first class in the Bachelor's degree.

Qualifications for the Post of Director of Physical Education

(i) A Master's degree in Physical Education (High Second Class) with Diploma in Sports Coaching from a recognised Institute.

OR

A Master's degree in Physical Education (High Second Class) with a record of having represented his University at the Inter-University level/State level in the National Championship.

(ii) Minimum experience of ten years in organising games and sports (as exemplified in handling of about half a dozen teams in a year in his Institution and their participation in the University/Inter College Tournaments) and ability to encourage mass participation in games and sports.

Note : The College reserves the right to revise the actual number and the nature of vacancies to be filled up subject to the actual need and within the teacher-pupil ratio constraints.

Completed applications for the posts listed above, alongwith attested copies of degrees/testimonials, should reach the Principal on or before **August 16, 1988**.

Dr. R. K. Kaushik
PRINCIPAL

SHIVAJI UNIVERSITY

KOLHAPUR

Applications are invited for the following posts.

1. ASSISTANT ARCHIVIST : One Post.

Qualifications : Master's degree in First or high Second Class in History with Diploma from the School of Archival Studies with one or two years experience desirable.

Pay Scale : Rs. 700-40-1100-50-1300.

Age : Less than 40 years, unless if already in the service of the University or affiliated colleges.

2. MICRO-PHOTOGRAPHIST : One Post.

Qualifications : Master's degree in First or high Second Class in Physics.

Pay Scale : Rs. 425-15-500-EB-20-700.

Age : Not less than 18 years and not more than 28 years of age.

3. CONSERVATIONIST : One Post.

Qualifications : Master's degree in First or high Second Class in Chemistry.

Pay Scale : Rs. 425-15-500-EB-20-700.

Age : Not less than 18 years and not more than 28 years of age.

The upper age limit may be relaxed for the above mentioned posts, in the case of S.C. & S.T. candidates by 5 years.

All other things being equal preference will be given to the B.C. candidates.

Applications on *plain paper* stating particulars regarding full name, date of birth, educational qualifications alongwith true copies of testimonials, experience, present position and pay etc. should reach the REGISTRAR, SHIVAJI UNIVERSITY, VIDYANAGAR, KOLHAPUR-416 004 on or before **4-8-1988**.

Dr. B.P. Sabale
REGISTRAR

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

COCHIN-682 022

ANNOUNCEMENT OF COURSES FOR 1988-'89

No. Ac. Al/441/88-89

Dated July 8, 1988

I. Department of Applied Chemistry, Cochin-22

(i) M.Sc. (Applied Chemistry)

Eligibility : B.Sc. degree with Chemistry main, Physics and Mathematics as subsidiaries with at least 55% marks in Chemistry.

(ii) M.Phil (Chemistry)

Eligibility : M.Sc. Degree in Chemistry/Applied Chemistry with minimum of 50% marks.

II. Department of Applied Economics, Cochin-22

M. Phil (Applied Economics)

Eligibility : Master's degree with at least 50% of aggregate marks.

III. Department of Electronics, Cochin-22

(i) M. Tech. (Electronics)

Specialisations : (a) Digital Electronics (b) Microwave and Radar Electronics.

Eligibility : 1. B.Sc. (Engg) or equivalent degree in Electronics, Electronics and Communication Engineering, Electrical Engineering or M.Sc. degree in Physics (with Electronics) or AMIE or Grad. IETE.

2. A Pass in Graduate Aptitude Test in Engineering (GATE). Those who have not passed the 'GATE' may also apply. They will be considered for the remaining seats, if any on their passing a written test and an interview.

(ii) Post-B.Sc. Diploma in Consumer Electronics and TV Technology

Eligibility : First Class B.Sc. degree with Physics main and Mathematics subsidiary.

IV. Department of Foreign Languages, Cochin-22

(i) Certificate Courses : Part-time-One Year

(a) German (b) Russian

Eligibility : Bachelor's degree

(ii) Diploma Courses : Part-time

Eligibility : Bachelor's degree and Certificate in the language concerned. Other eligible graduates are also admitted subject to passing an entrance test.

V. Department of Hindi, Cochin-22

(i) M.A. (Hindi)

Eligibility : B.A./B.Sc., degree with Hindi as a subject of study with at least 45% marks in Hindi.

(ii) Post Graduate Deploma in Translation, Administrative Drafting and Reporting in Hindi.

Eligibility : Bachelor's degree with Hindi as one of the subjects.

(iii) M.Phil. (Hindi)

Eligibility : M.A. degree in Hindi with at least 50% aggregate marks.

VI. Department of Industrial Fisheries, Foreshore Road, Cochin-16

M.Sc. (Industrial Fisheries)

Eligibility : Bachelor's degree with Zoology/Botany/Fisheries or Chemistry (main with Zoology and Botany as subsidiaries with at least 55% marks in the optional subjects.

VII. Department of Law, Cochin-22

LL.M.

Eligibility : Bachelor's degree in Law with at least 45% marks.

VIII. School of Marine Sciences, Foreshore Road, Cochin-16

(i) Marine Biology, Microbiology & Biochemistry division : M.Sc. (Marine Biology)

Eligibility : 55% marks for B.Sc. degree with Zoology main and Botany, Biochemistry, Chemistry or Geology as subsidiary subjects.

(ii) Physical Oceanography and Meteorology division : (i) M.Sc. (Oceanography) and (ii) M.Sc. (Meteorology)

Eligibility : 55% marks for the B.Sc. degree in Physics (Main) with Mathematics or/and Chemistry subsidiary or Mathematics (main) with Physics or/and Chemistry subsidiary.

(iii) Marine Geology division M.Sc. (Marine Geology)

Eligibility : Bachelor's degree in Geology with at least 50% of aggregate marks for optionals.

IX. Department of Mathematics and Statistics, Cochin-22

(i) M.Sc. (Mathematics)

Eligibility : B.Sc. degree in Mathematics (main) with at least 55% marks in the optional subjects taken together.

(ii) M.Sc. (Statistics)

Eligibility : B.Sc. degree in Mathematics/Statistics (main) with at least 55% marks in the optional subjects taken together.

(iii) M. Phil (Mathematics)

Eligibility : M.Sc. degree in Mathematics with at least 50% marks.

X. Department of Physics, Cochin-22

(i) M.Sc. (Physics)

Eligibility : B.Sc. degree in Physics (main) and Mathematics subsidiary with 55% marks in Physics.

(ii) M.Phil. (Physics)

Eligibility : Master's degree in Physics with 50% aggregate marks.

XI. School of Management Studies, Cochin-22

M.Phil (Commerce)

Eligibility : M. Com. degree with 50% marks.

XII. School of Environmental Studies, Foreshore Road, Cochin-16

M.Sc. (Environmental Sudies)

Eligibility : Bachelor's degree in Science/Engineering or Technology with at least 55% marks in the optional subjects in the qualifying examination.

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1. SC/ST candidates are eligible for all concessions granted by the State Government in minimum marks, etc.
2. Admission to the various courses will be based on rules of reservation separately applicable to professional and post-graduate courses.
3. Twenty-five per cent of seats for the

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4. Five seats of M.Sc. degree course in Industrial Fisheries are reserved for the Government of Kerala of which 2 are for officers of the Department of Fisheries and 3 are for candidates belonging to the Fishermen Community.
5. Three seats for M. Tech (Electronics) are reserved for candidates sponsored by Electronics Industry, Teaching and Research Organisation of Central and State Government. The candidates thus sponsored must have a minimum of three years experience in the relevant field.
6. Hostel Accommodation will be available only for Limited number of Candidates.
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8. Application form will be issued only from 18th July, 1988.

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V.J. Pappoo
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Last date for receipt of completed application is **8.8.88.**

Note : Pay Scales to the above posts are likely to be revised in due course, based on U.G.C.'s recommendations.

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COORDINATOR

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M.K. Gangajaliwale
REGISTRAR

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University News

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University of Bombay
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Editor :
SUTINDER SINGH

University of Bombay

The Oldest Young University

G.L. Abhyankar*

I

At the time this Profile is being penned, the University of Bombay is entering the 132nd year of its glorious existence. While its birth on 18th July, 1857 witnessed the passing of India from under East India Company's rule to control by British Parliament, the last decade of its century long existence witnessed the dawn of Independence and the passing away of the British Rule. The blossoming of Indian nationhood and its present strength have been the direct product of the spread of higher education. No wonder that association with this premier University has been a matter of pride for all those who have passed through its portals. The year 1988 marks the completion of 100 years since the first woman graduated from the University. The authorities are, therefore, aptly celebrating the event on the Foundation Day this year.

The University started as a purely affiliating and examining body, and though since 1919, teaching at post-graduate level was introduced, the University remains even today a predominantly affiliating University with 165 degree colleges over five districts since 1974—Greater Bombay, Thane, Raigad, Sindhudurg and Ratnagiri. It has 32 postgraduate departments. 90 recognized institutions of research and specialized studies and 48 qualified institutions of postgraduate training are also attached to it. In 1857 it started with four faculties—Arts, Law, Medicine and Engineering—whereas today it has five additional faculties—Dentistry, Science, Commerce, Fine Arts and Ayurvedic medicine (including Unani and Homeopathic). The number of proposed faculties under the impending revision of the Act and Statutes is 14. Basically, however, the only significant addition over the years happens to be that of the Faculty of Fine Arts. The rest of the increase in the number of faculties has been a consequence of increasing specialization in studies and research. Arts, Science and Commerce are the most populous faculties even today, because professional education is still too expensive and time consuming to be within the reach of the common man, partly because the medium of instruction is still English, but mainly because literacy is as yet too low to influence the content and direction of higher education.

It was the curious admixture of a liberal view of state responsibilities to the populace and the day to day administrative needs of rulers that resulted in the introduction of university education in India. This characteristic of the beginnings of higher education in India, and the graceful acknowledgement of debt to western culture and thought have continued to dominate the growth and spread of university education till recently. We thus have a coexistence of two strains of policy and action: moral and constitutional responsibility of the state in the matter of education at all levels on the one hand, and reluctance of the state to get financially deeply involved, on the other. The story of the construction of University buildings at its pristine campus at Fort, Bombay, of the Convocation Hall, of Rajabai Tower, and of the development of

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**Pro-Vice-Chancellor, University of Bombay-400032.*

Kalina Campus in the sixties and later, are a testimony to the unfailing intense desire of the state to "control" educational institutions, and the equally unfailing financial timidity on the other side. The establishment of the University Grants Commission has no doubt brought about a slight change in the situation, but since it is primarily a funding agency, itself dependent on the resources to be made available to it by the State, the "too little and too late" characteristic of state action has not shown any marked change.

The physical expansion of the University had to wait till the University completed its century, and the University Grants Commission made a munificent grant of Rs. 100 lakhs, enhanced by the corresponding grants of Rs. 10 lakhs each from State Government and Municipal Corporation. Half of this grant had, however, to be consumed in 'purchasing marshy, undeveloped land" for its expansion and development. The academic expansion of the University till the fifties depended entirely on the munificence of Bombay citizens and their charity, and was, therefore, rather slow. After the sixties, it has depended on successive plan grants by the University Grants Commission, and the delayed matching grants by the State administration. As such, expansion has been by fits and starts. In the remaining decade or more of the twentieth century, when the universities are being saddled with more and more responsibilities, perhaps rightly so, in the direction of continuing education and extension, functional literacy, vocational training, adult education, interdisciplinary studies and research, development of science, technology and management education, and are being exhorted to act as agents of social change, and monitors and moulders of student behaviour, in an atmosphere already spoilt beyond recognition by politicians sowing the seeds of unprincipled competition, and divisive and disintegrating philosophies, the hope for mobolizing adequate resources for development leans heavily on public-spirited citizens and their untied charity.

II

Just as India is the oldest young nation in the world, the University of Bombay is the oidest young University in India. It has kept its windows and doors ever open to winds of change Its motto शोलवृत्त फल बिद्या is of perennial relevance, and its principle आ नो भद्रा : ऋतवोयन्तु बिश्वत : is a guarantee of its undying youth. It is situated on an island, but has never been an island unto itself in the academic world. For long years, its area of jurisdiction covered all towns from Karachi to Dharwar. The rise of new universities elsewhere coincided with the growth in numbers in the Province of Bombay itself; so that the burden of responsibilities experienced no diminution. In 1965, Goa was added to its jurisdiction; it remained with it till 1986. In 1974, four districts of Western Maharashtra were added; and unless a separate Konkan University is established, there is no likelihood of this metropolitan University being shorn of its mofussil wings. The University has therefore, to contend with dual responsibilities. It has to be true to its metropolitan character and struggle to be abreast of change; simultaneously it has to carry with it the up and coming generations from mofussil areas, struggling to join the mainstream and get away from the shackles of a poor and uncertain economy. It is functioning from two campuses, the new representing its teaching function, add the old, its affiliating and examining function. The latter perhaps has been occupying too much of its attention, energy and scant resources. However, brief notes given separately in this issue on Drought Relief Work under National Service Scheme; Mass Programme for Functional Literacy, B.Sc. Degree course in Nautical Science, and the Centre for Advanced Studies and Research in Ocean Science and Technology, the conduct of training programmes for SC/ST candidates, on Western Zone Youth Festival, and the visit of Prince of Japan bear testimony to the fact that the ability and willingness to break new ground, whether in satisfying emerging social needs, or in responding to calls for implementing national programmes, continue as strong as ever. Add to this the programmes of Garware Institute of Career Education and Development, the establishment of a Numismatic Gallery, the institution of studies in Investment and Finance, the strengthening of Academic Staff College with the addition of Counselling Services and Teachers' Resource Centre, and the impending projects for Interdisciplinary Studies in International Relations financed by the Ford Foundation, U.S.A , and one will realize that the tradition of registering the first in new directions continues unbroken. All in all, the University looks forward to the Twentyfirst Century with the confidence that its alumni would be able to hold their heads high in any part of the globe at all times. ☐

UNIT
17 AUG 1988
C.F.T.R.I., MYSORE

University of Bombay

A FLOATING COLLEGE

TRAINING SHIP RAJENDRA

The shipping history of our country stretches over many centuries and across many eras. India is today one of the most advanced nations in the developing world in respect of the merchant marine fleet.

The need for navigating trainees for the merchant navy has been met so far by the Indian nationals trained at the T.S. ‘Rajendra’ specially established for the purpose in 1972 which succeeded the renowned T.S. Dufferin set up in 1927. The training imparted at T.S. ‘Rajendra’ turned out officers whose qualities and dedication became the envy of foreign shipping companies.

Recently, T.S. ‘Rajendra’ has been trying its level best to up-date training and syllabi, keeping in view the rapid technological advance and the future requirements of the country. It had been running a two-year diploma course for 250 cadets and the selection of candidates was being made through an entrance examination held on All India basis. The candidates passing the Higher Secondary School (10+2) examination from the science stream (with Mathematics, Physics and Chemistry) have been held eligible to appear for such entrance examination. To get actual work experience, the cadets are posted on board foreign going ships for about one and a half year’s period, no sooner they complete their training, programme of 2 years and thereafter they become eligible to appear for a Certificate of Competence as Second Mate. After completing the requisite sea service, these trainees can appear for the First Mate and Master Mariner’s examination conducted by the Mercantile Marine Development of the Government of India.

These arrangements were found to be incomplete and inadequate in terms of further education and training of the Mates completing their marine service. It was felt that if the curricula was restrucurted and extended by one year to qualify for the award of the degree of B.Sc. (Nautical Science) it would not only help the Mates but also give professional character and standing to the course.

The establishment of a degree course in Nautical Science would broaden the scope of further studies for brighter students who could get eligibility to pursue higher education in marine related fields especially Law, Management and Engineering.

The year 1986-87 will be inscribed in golden letters in the history of the University of Bombay, since in that year the University granted affiliation to T.S. ‘Rajendra’ for imparting training for the degree of B.Sc. in Nautical Science and perhaps, ours will be the first University in India to have started such a professional course in the field of mercantile marine. This is the first floating college in the country to be affiliated to any University. The first year and the second year annual examinations will be conducted by T.S. ‘Rajendra’ like any other affiliated college, while the annual examination for the third and final year will be held by the University.

The first examination of the first year B.Sc. in Nautical Science was held in the month of May, 1988.

Captain S.S.S. Rewari, Captain Supdt. of the Training Ship ‘Rajendra’ prepared the syllabus for the course with the help of a committee comprising, among others, Captain P.S. Barve and Captain S.S. Naphade, that extended active cooperation to the University in shaping the syllabus against a proper perspective. Shri Jal Coursetji was the Convener and Dr. (Smt.) Naramada Khodie,Head of the Department of Law, and a recognised guide in International Commercial Law and Practice, another member of the committee.

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

Areas Beyond India's Borders : Centres of Area Studies on USSR and Africa

With the independence of India, and even before that, the national leaders have often underlined the need and significance of enlightened awareness of the world beyond our borders. The establishment of Indian Council of World Affairs (1943), New Delhi and later Indian School of International Studies (1955) were the early steps in that direction. By the early 1960s, the University Grants Commission stepped in to further promote the discipline of "Area Studies" in Indian Universities. The University of Bombay was identified to establish, with the approval of the Government of Maharashtra, two Area Study Centres in 1971. One of the Centres was related to "Eastern Africa" and the other to "Soviet Union". The two Centres were subsequently granted independent departmental status, in the University set up, in 1983.

As departments of the University, the two Centres are expected to promote teaching courses at postgraduate level and research on socio-economic, historical and political developments as well as India's relations with USSR and African countries. Both the Centres promote interdisciplinary studies and have multidisciplinary faculty on their rolls.

Activities and Achievements

Teaching

One of the major objectives of the two Centres is to impart training to students at the postgraduate level with a view to create expertise on the respective world regions. In pursuance of this objective, the two Centres have recently introduced M.A. degree with a 4-paper course in African and Soviet Studies respectively, which can be offered by students in combination with another 4-paper course in any of the other social science disciplines such as Civics and Politics, Economics, History, Sociology, Geography, etc. The students are offered combination degree taking adequate care that their discipline orientation is not disturbed. Simultaneously they develop expertise on important world regions with whom India has all along maintained close and cordial relations.

Besides postgraduate teaching, the two Centres also register students for Ph.D. degree of Bombay University under the guidance and supervision of the Centre's faculty. Several UGC sponsored Junior Research Fellowships are available to students for their doctoral work on Africa and USSR. At present the two Centres together have on their rolls 10 research students working for their doctoral degrees.

Research

Research is by far the major activity of the two Centres. The staff members of the Centre undertake research projects on contemporary issues relating to the problems of Africa and USSR and also on India's relations with both these regions. Several research projects have been completed by the senior faculty of the two Centres, some of which are on contemporary African problems, security and development issues, India-Africa relations, Indo-Soviet trade, Super-power relations and so on. In addition to this, several short term research projects have been undertaken and completed by the faculty on topics related to political developments, economic issues and socio-historical developments in USSR and Africa.

Publications

The research output of the faculty of the two Centres has been substantial. By now they have published 12 books and over 300 research papers and articles in several academic journals and periodicals. Moreover, 5 more books are in the pipeline and are likely to be published by the faculty in the near future. The books and research papers and articles are mostly focussed on the process and the problems of developments in USSR and Africa and India's relations with these two important world regions.

Both the Centres have also been bringing out occasional papers based on research projects completed by the Faculty. Since 1985 the Centre of East African Studies has been publishing "*African Currents*"— a Newsletter of the Centre, while the Soviet Studies Centre publishes the "*Bulletin on USSR*" and "*Newsletter*" every academic term. These journals give information about the contemporary developments and analysis concerning USSR and Africa, related problems and also give information about the activities of the two Centres. The publications have been found to be useful by the academic community as well as by other interested sections of the society, including business community and policy makers. The "Bulletin" and "Newsletters" are circulated to various Universities and research institutions in the country and several other world renowned institutions outside the country.

Documentation Services

Both the Centres have acquired a sizeable collection of primary and secondary sources of materials on their respective areas over the last 15 years. The two Centres now propose to develop documentation service on a larger scale to develop these as Documentation-cum-Data Banks for the benefit of research scholars and teachers in Indian universities interested in the field of African and Soviet Studies

Seminars, Conferences, Workshops

Both the Area Studies Centres have been actively engaged in arranging from time to time national/international seminars, orientation courses, workshops, refresher courses and so on. The themes of seminars range from micro-analysis of the study of these areas—be it agriculture, urbanisation, or macro-topics covering India's relations with Africa and USSR respectively. The participants to these seminars include not only academics and area specialists but, depending on the theme of the seminar, several senior government officials, business executives and senior journalists and other eminent persons. Both the Centres have particularly taken care to invite for the seminars, refresher courses etc., teachers from the universities in Maharashtra in particular, and Western region as a whole, both as resource persons as well as participants.

Briefly, the two Centres at Bombay University have already made a country wide impact and emerged as national centres of excellence. They have received encouragement from University Grants Commission as well as Ministry of External Affairs, Government of Maharashtra and several organisations with which they have interacted from time to time. It may be particularly mentioned that in their research programmes and holding of conferences/seminars, they invariably promote active interaction with organisations such as University Grants Commission(UGC), Indian Council for Social Science Research (ICSSR), Indian Council for Cultural Relations (ICCR), Indian Council for Research on International Economic Relations (ICRIER), Indian Council for World Affairs (ICWA), Federations of Indian Chamber of Commerce and Industry (FICCI) and Indian Chambers of Commerce etc. They also collaborate with sister social science departments of the University such as Departments of Politics, Economics, History, Sociology and Geography.

With the growing importance of Africa and USSR in India's international relations, the research work and teaching programmes of the two Centres are bound to go a long way in developing India's own expertise concerning these two world areas and create a core of specialists with indo-centric perspective of the world around us. □

UNIVERSITY NEWS

A Weekly Chronicle of Higher Education

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University of Bombay

Centre of Advance Studies and Research in Ocean Sciences and Technology

Introduction

Oceans hold the key to the future human needs for food, minerals, energy and freshwater resources. To explore and exploit these resources, it is necessary to encourage development and establishment of required infrastructure in terms of R & D organizations, trained manpower and specialized instrumentation. The importance of scientific studies of the sea has been recognized by the Government of India, and ocean research and ocean development have been identified as one of the thrust areas. It is therefore expected that the demand for trained manpower in the areas of ocean sciences and technology will increase in future. This has become especially significant in view of the seven successful expeditions to Antartica, the recognition of India by the International Sea Bed Authority as a pioneer investor with mining rights for polymetallic modules, the exploration and exploitation being conducted for hydrocarbon resources and the Fishery Survey of India.

Oceanography is a multidisciplinary science and proper approach to teaching oceanography requires inputs from disciplines like physics, chemistry, biology, microbiology geology mathematics and engineering.

The Department of Ocean Development, Government of India, recognizing the importance of manpower development for future requirements is supporting and funding programmes at the universities and research institutions.

The teaching of marine sciences is offered only at a few maritime universities in India, mostly at the postgraduate level. Although marine biology is taught in many universities for quite some time, it is only in recent years that some universities have added teaching and research in Marine Geology, Marine Chemistry and Physical Oceanography.

Department of Ocean Development (DOD) had sponsored a workshop during 1986 to discuss the status of marine science curriculum in India in order to design a model curriculum for adoption by all the universities. The important recommendations arising out of the workshop were :

- —A core syllabus for an integrated two years Master's degree programme at the universities should be evolved.
- —Marine sciences should also be taught at the graduate and undergraduate levels as a distinct subject.
- —All organizations in the country should recognize M.Sc. (Marine Sciences) as a subject of competitive examinations and employment in the same manner as the M.Sc. for example, in physics, chemistry, zoology, etc.

In order to promote related studies, the University of Bombay has recently established a "Centre of Advance Studies and Research in Ocean Sciences and Technology" at its Kalina Campus. The Centre is presently housed in the buildings of Western Regional Instrumentation Centre (WRIC) and Life Sciences Department. It was inaugurated by Dr. S.Z. Qasim, Secretary to the Government of India on 18th February, 1988.

The University is inclined to encourage research in the disciplines like marine instrumentation, marine chemistry, marine microbiology, marine biology and marine pollution to begin with.

Acknowledging the efforts of the University, the DOD sanctioned 8 Junior Research Fellowships and 2 Research Associateships. The majority of these positions have already been filled at WRIC, Department of Chemistry, Department of Microbiololgy (St. Xavier's College), and Institute of Science. In addition the University has also encouraged faculty from its own institutions as well as those affiliated to it to undertake research programmes by submitting project proposals for direct funding from the Department of Ocean Development.

The research programmes undertaken by these institutions and coordinated by the Centre are given areawise below :

Marine Microbiology

Marine Microbiology, which used to be the Cinderella of the Marine Sciences, is now coming into prominence and being given the importance and attention it deserves.

The marine environment, both aqueous and sedimentary, represents and "inner space" in which microorganisms play a vital role, for better and for worse.

In the Department of Microbiology at St. Xavier's College, Bombay, a constituent college of the University, pioneering work, both academic and applied, on microbes from the marine environment, has been conducted over the last four decades, with very promising results. Consequently two research projects have been sanctioned by the Department of Ocean Development for investigation at this department under the guidance of Dr. Yvonne M. Freitas.

(1) The first of these projects, titled "Metabolites of Microorganisms isolated from Deep Sea Cores" aims at the isolation of microorganisms from deep sea sediments, with potential and ability to produce Antibiotics, Vitamins, Enzymes and Enzymeinhibitors of commercial importance. The organisms will be screened and promising isolates will be selected for developmental studies. The best strains will be further studied towards the utilizasion and application of their active metabolites in the pharmaceutical industry.

(2) The second project aims at the control of fish diseases which take a drastic toll of fish life, reducing the abundance of this high protein food, in the sea and in aqua-culture. To this end, the project will involve identification of fish diseases, especially in conditions of pisciculture. The causative pathogen will be isolated and characterised with respect to the fulfilment of Koch's postulates. Epidemiological studies will be conducted and prophylactic and therapeutic measures will be developed.

Alkaline Phosphatase

An application has also been made for a 3-year project entitled "Studies on Alkaline Phosphatase Production by Microorganizms from Marine Sources". The increasing use of techniques like ELISA, immunostaining and genetic engineering has emphasised the need for Alkaline Phosphatase (APase). Future developments, like enzyme involved photo-imaging, will further increase the demand for the enzyme. The marine environment, especially the bottom deposits are known for the presence of high levels of APases. Hence, this project aims at isolating APase producing microorganisms from marine sources and studying these APases, with respect to not only their industrial importance but also their environmental significance.

Sea water and sediment samples will be screened for APase producers, and enzyme synthesis will be studied in the best isolates. Various parameters will be monitored with respect to optimum enzyme production. Mutagens will be applied to obtain higher yielding mutants. Purification and characterisation of the enzyme will be followed by scale-up in a fermenter, taking into consideration conditions required for optimum synthesis of the enzyme towards large scale production.

Marine Biology and Pollution

The Zoology and Biochemistry Departments of Institute of Science, Bombay, an institution affiliated to the University of Bombay, have been involved in research, training and development in the field of ocean sciences, in particular Marine Biology, for the past five decades, which was initiated under the able leadership of late Prof. P.R. Awati and further developed by Dr. D.V. Bal. The institute has received support of the Department of Ocean Sciences for the following projects :

Zoo-Planktonic Population

Marine food chains depend upon basic trophic levels of primary producers. Primary producers of the sea are the minute phytoplanktonic organisms like diatoms, algae, etc. They determine the extent of zooplankton and other consumers which are directly or indirectly dependent on them. Planktons thus play a vital role in determining the productivity of the sea and in turn, fish catches depend upon the abundance and diversity of plankton. Thus, for evaluation of biomass productivity and other factors related to fisheries, studies on plankton are most essential. In India, especially on the Bombay coast, planktological work is done by few research scientists.

Hence, an attempt will be made under this scheme to collect the data on seasonal abundance and fluctuations along with some of the physical and chemical parameters which affect the composition and density of the plankton community of the Bombay coast, with special reference to larval forms which are commerically important. This forms the very basis of the commercially important fisheries.

Production of Glycerol

The production of glycerol through growth of marine algae, *Dunaleil* sps. is of great significance as the vast coastal area can be used for cultivation of such algae which will grow and give the necessary biomass for the production of glycerol, single cell proteins and biological pigments in this region. The economic importance of production of glycerol through marine organisms is of great significance. This information will open a new biotechnology for production of chemicals through marine environments. The effect of various pollutants can also be studied with respect to production of glycerol in brackish water.

Aquaculture

Marine fish production in India is stagnant at about 1.8 million tonnes/year but it has nearly 90,000 hectares of cultivable brackish water land which can yield nearly 3-4 million tonnes of fish for India's protein deficient hungry population. The present yield of marine fish is mainly dependent on capture fisheries but it can be increased by employing culture practices. Studies on the early development and taxonomy of various species of fishes and prawns off the west coast of India have been made so far. However, mariculture has remained neglected though successful attempts are made in culturing some inland varieties of fishes like Rohu, Catla, Mrigal and some species of prawns. To start the culture practices on a commercial basis, it is necessary to initiate preliminary experiments under controlled laboratory conditions. With this view, it was therefore, thought that acquaculture practices using shell fishes like prawns, crabs, oysters would be important. Some information on the habitat selection, spawning settlements and growth is being generated. A successful mastering of such experiments could trigger the future economic standard of the Indian fisheries.

Marine Pollution

Since pollution hazards are becoming inevitable phenomena of industrialized areas like Bombay, it has become most essential to focus attention on different aspects of pollutant-induced toxicity to biota. It is quite alarming to note that our marine waters are showing tremendous levels of toxicants like pesticides, hydrocarbons, crude oil, metallic pollutants, sewage, etc. Estuaries, creeks and coastal seas also function as receptors of such industrial and domestic wastes. When such vast array of pollutants is getting added constantly to water bodies and chiefly to marine waters, it becomes obligatory to focus our attention on adverse effects (both qualitative and quantitative) of such pollutants on marine life. Thus, studies will be carried out using biochemical and biological parameters to investigate these effects.

These studies not only help to reveal their toxic effects on biota but also to monitor the levels of pollutants which are being released into the sea.

Micro-algae

The Institute has also forwarded a major scheme entitled — "Studies on micro-algae as a non-conventional source for production of chemicals and single cell proteins" to the Department of Ocean Development, New Delhi.

Marine Instrumentation

The Western Regional Instrumentation Centre, an institution of the University, has approached Department of Ocean Development for financial support and development of marine instrumentation.

Assessment of Freshness of Fishes

The assessment of freshness of fish has remained much of an art than science so far and for majority of consumers, it has remained a matter of experience. A lot of work has been done in the west in assessing the freshness of catch mainly of those species which are popular in European countries. Very little work has been done on the species which are generally found in Indian waters and relished by Indian populace. It is therefore important to develop a scientific basis to assess the freshness of these fishes. A proposal to develop an electronic instrument which will assess the various decay parameters in the body of a fish, has been made to the Department of Ocean Development and has been approved for support. The work in this area is under way.

Ocean Parameter Studies

The Centre has also proposed a major project for development of microprocessor based instrumentation for ocean parameter studies. It has been recognized that the biological and other resources of the ocean depend, to a very large extent, on physical and chemical parameters of the ocean which sustains them. It is, therefore, necessary to undertake detailed study of each of them for making proper research assessment of the economic zones assigned to the country. The proposal therefore aims at developing an automated microprocessor controlled measurement of the important parameters such as pH, salinity, dissolved oxygen (DO), Oxidation Reduction Potential (ORP), turbidity, and water temperature as a function of ocean depth. The instrument under design is capable of taking measurements up to the depth of 200 mts. and can be taken to the site of measurement by a semi-skilled operator in a mechanized boat. This would permit continuous monitoring of water parameters of the ocean over a large area through use of a few thousand mechanised boats which are now used by fishermen of Indian coastline.

Marine Chemistry

The Department of Chemistry of the University is also involved in research related to chemistry of marine environment and its application in areas such as drugs. Some of the projects approved by the Department of Ocean Development are given below :

Chemicals from the Sea

In order to successfully exploit the ocean's wealth by way of recovering chemicals and materials from the sea, vigorous research and developmental activity is essential in addition to the consideration of economic, political, legal and ecological factors. Work is proposed to be directed towards various types of chemical and material resources such as the following :

(a) from sea water — fresh water (desalination and distillation) magnesium and magnesium salts hydrothermal brines salts such as bromides, iodides

(b) from the sea floor — Metal rich sediments, ferromanganese nodules, phosphorite nodules, construction materials placer and beach deposits

(c) from beneath the sea floor — Sulphur, coal, hydrocarbons

Efforts will be directed towards developing appropriate physico-chemical techniques of concentration and separation suitable for recovery and conversion to useful form of resources from among the above mentioned materials.

Drugs from the Sea

Recent developments in marine pharmacology involving extraction and identification of substances from marine organisms, useful primarily for medical purposes, have opened up profitable area of investigation for obtaining vitamins and drugs from the sea.

The project will include extraction of such potentially useful medicinals/crude organics from marine organisms, both of plant and animal kingdoms and studying their physical and chemical properties and screening their physiological activities. Studies will also be directed towards purifying the drugs and exploring their suitable formulations. The medicinal substances obtained in this manner are found to possess diverse curative and preventive properties such as cardiovascular, antifertility, hypertensive, diuretic, hypotensive, antiviral, steroidal activity.

As a long-term prospect of developing this activity intensively in the University, it is proposed to approach the University Grants Commission for establishing a postgraduate department of Ocean Sciences with funds from the Commission. ☐

Western Regional Instrumentation Centre

Introduction

The importance of close cooperation between universities, industries and national laboratories has been recognized in the context of industrial development since independence. The initiative in this direction was taken in early seventies by National Committee on Science and Technology (NCST) and the University Grants Commission (UGC) by framing a suitable action plan at various levels. A bi-national conference was arranged, in 1973 at Srinagar, by the UGC, aimed at identifying areas and modalities of collaboration between universities and the others. The conference concluded, on closer examination of conditions then prevailing in the universities, that they were then lacking minimal technological infrastructure required for such collaboration. It was therefore, decided to introduce this important element in the general infrastructure of the universities on priority basis and the Commission contributed towards it by establishing a number of University Science Instrumentation Centres (USICs). The USICs were set up in 56 universities in the country and two Regional Instrumentation Centres (RICs), one at Bombay and another at Bangalore, were established as resource centres to support the USICs.

The Western Regional Instrumentation Centre, Bombay, was established in 1977. In a detailed survey of state of instrumentation, availability of manpower, and possible modalities of spreading the culture of instrumentation in the universities through training, maintenance, and Research and Development were examined. The Feasibility Report was approved by the Commission and was taken as a basis for programmes of the Centre since its establishment.

Objectives

The overall thrust of its activities has been to support the UGC's efforts in creating adequately self supporting infrastructure in most of the universities by the end of the VIth Five Year Plan. The long-term objective frame of the Centre, as defined by the Commission is as follows :

1. To train resource personnel with a view to generating technical cadre in USICs and colleges under the universities.
2. To provide servicing and maintenance facilities to sophisticated instruments.
3. To design and develop new teaching aids with the help of teachers of ULP and COSIP and others and work out mechanism for their dispersal in higher education system.
4. To transform the latest developments in instrumentation in research laboratories and other institutions in the country so as to make them suitable for use in the higher education system.
5. To conduct R and D programmes in instrumentation of interest to the higher education system and to the other sectors such as industry, research laboratories, etc.
6. To interact with industry, research laboratories and other sections of the society in the interest of development and growth of science and technology of instrumentation.
7. To provide updated technical information to produce source material for training and to disseminate information of the latest developments in instrumentation to the universities and colleges.
8. To render analytical services on sophisticated equipments to the universities.

These objectives have been translated into a specific action programme given below. The activities included in the programme, viz., training of personnel, development of advanced instruments, instruments maintenance and information dissemination, are complementary to each other in achieving maximum impact and form an integrated strategy. Interwoven in this strategy, though not explicitly stated, is the Centre's role as a resource centre for the USICs and as a USIC for the University of Bombay and SNDT Women's University.

Training Programmes

The main aim of the training programmes conducted by the Centre is to improve the technological competence of teaching and non-teaching staff in universities, colleges and USICs. Towards this, the Centre has been conducting a number of short-term courses on instrumentation and related subjects as one of its major activities. So far, 36 short-term courses have been conducted, covering more than 850 participants. The overall response to training programmes from the institutions sending their personnel is found to be encouraging. One of the reasons for this is that the areas of training are chosen after assessing the needs of the trainees in the environment in which they are working.

An important limitation happens to be the non-availability of competent staff who could cover wide range of instrumentation used in various branches of science and technology. The efforts of the Centre to get well-qualified staff at the officers' level have not borne fruit so far due to paucity of such people. The Centre proposes to undertake a major doctoral programme for inducting fresh manpower for its future programmes. In the recent past, it has tried to involve professional bodies, such as Indian Chemical Society, National Society for Application of Radio Activity for Industry, Academy for Environmental Education, and various departments of the University to enhance its teaching manpower for courses.

Short-term courses in general have their advantages as well as shortcomings as regards the development of manpower in the university system. In view of the fact that there is a severe paucity of appropriate type of manpower in the area of instrumentation in the academic institutions as well as in the industry, it may be necessary to have courses of longer duration oriented specifically towards aspects of instrumentation such as maintenance. This coincides with the current thinking of the UGC and Department of Electronics in this area and the Centre therefore plans to launch a one-year post B.Sc. diploma in instrumentation. It is also proposed to have this in modular form with each module of shorter duration, for the convenience of the USIC and industry staff who may not be available for an extended period. Figure 1 shows at a glance the training programmes so far conducted.

Development & Fabrication of Teaching Aids/ Laboratory Instruments

Teaching aids require not so much of high technology, as clear understanding of the way concepts are to be visualized using them. In view their importance in science education and also thei contribution in building up instrumentation an technology culture in the higher education system the Centre consciously adopted a programme o teaching aids development. The programme wa supplemented by the development of low cost versions of laboratory instruments for various scienc disciplines. These often formed part of the WRIC courses as projects. The Centre undertook fabrication of the instruments developed, because this way they could become available for use, readily and cheaply, to interested teachers.

Response to the teaching aid development programme has been particularly good in areas such as psychology in which the teaching community took keen interest in the programme. A major psychology teaching aid-cum-research instrument developed by this Centre has gained nationwide acceptance. Fig. 2 gives a summary of the work done.

Maintenance of Instruments

As an essential component of our activities aimed at spreading the culture of instrumentation, the Centre has been providing facilities for maintenance of instruments for educational institutions as well as to research organizations in the region. Most of the colleges in the Bombay University region have been fully utilising these facilities and overall incidences of instruments remaining idle for want of repairs has appreciably reduced (Figures 3 & 4).

This service has been conducted mainly on promotional basis so as to help the colleges in keeping their instruments working and the Centre has charged them nominally for components and overheads. The Centre has serviced instruments costing about Rs. 40 lakhs during this period. Whether such type of concessional charging be continued after having brought the teachers of the colleges to a high level of awareness in instrumentation, is a question that needs to be carefully studied in the context of financing this programme. The recovery from even these nominal maintenance charges exceeds Rs. 66,000/-.

Extending the clientele beyond the Bombay region has proved logistically difficult. Nonetheless, it is worth mentioning that the Centre conducted two Maintenance Camps in conjunction with the Training

Programmes it arranged at Panvel, a mofussil town in the Bombay University area and at Panaji, Goa. Also institutions from district places within the Bombay University areas and in the state of Maharashtra have often taken advantage of Centre's service. These facts point to a possible extension of services to mofussil areas and to the whole region.

Also enlargement of the present clientele may possibly be done by inviting medical colleges and other instrument-using institutions as well as local industries to take advantages of this facility. Attempts already made in this direction are encouraging.

Information Dissemination

It was recognized from the beginning that spreading the instrumentation culture would require an effective means of communication between members of the USICs, RICs, colleges and university departments. The Centre therefore ran a bimonthly, "Instrumentation Newsletter" between 1978 and 1980. This evolved into the 'Instrumentation Bulletin', a quarterly of fairly high standard published since 1981. Except for periods during 1982-83 when there were uncertainties regarding its funding, the Bulletin has come out regularly until the end of 1986 when primarily for infrastructural difficulties the publication had to be suspended. Until then 13 issues were published. These included two special issues, one on the occasion of the Asian Instrumentation Workshop held at Bangalore in April 1981 and the other in commemoration of late Professor B.N. Bhattacharya, Founder-Director, RSIC, I.I.T., Bombay. Received well by all readers, 2500 copies of the Bulletin were sent free of cost to all science, technical, engineering and medical colleges in the country, to all USICs, RICs and universities, to all national laboratories and other research institutions in the private and public sector and to many industries.

The Documentation Section of the Centre runs an information bank on instruments. Information about use, specifications, manufacturers and availability of instruments and components is collected and distributed to needy institutions. Also an abstract service is provided to USICs and universities by means of a quarterly Abstract Bulletin incorporating abstracts from reputed journals on instrumentation. So far three issues of this bulletin have been brought out.

Research & Development

The objective frame of the Centre includes research and development in instrumentation. In the past this was not a separately organized activity. So a number of instruments developed by the Centre were reported under the Teaching Aids Development Section. Major among these is the **PSYCHRON**, a human reaction time measuring instrument designed as a teaching aid-cum-research tool in applied psychology and already installed in more than 15 major universities and institutions in the country.

Another major instrument developed by the Centre is the **Fine Particle Analyser** which measures particle sizes between 0.5 and 100 microns. The instrument will find use in industries such as paints, dyes, pharmaceuticals, cement and ceramic and in industrial and R & D substituting expensive imported equipment. It is awaiting technology transfer.

The optical shop has designed a number of optical components and subsystems. Main among them are Nicol and Wollaston (polarizing) prisms, single direct vision prism, Lens-system for Laser-Raman Spectrometer, Czerny-Turner monochromator, etc. (Figure 5).

The Centre has now separate R & D Division. Many of the projects have been carried out by M. Phil (Physics) students under the guidance of the Centre's staff. The hospitals and medical community on the one hand and industries on the other have been coming forward to design and build instruments in collaboration with the Centre.

RIC-USIC Interaction

The staff of the University Science Instrumentation Centres established in different universities is regularly represented in WRIC courses. Similarly, from the point of view of extending the benefit of its activities to the region, WRIC held some of its courses along with maintenance camps at different locations in the western region. This has resulted in close interaction between the two types of institutions. To crystallize this process further, WRIC conducted one all India meeting of the USIC Heads in 1984 and three regional meetings since then. Also the USICs continually seek WRIC's help regarding information about instruments, handbooks and specialized literature, technical matters pertaining to maintenance, fabrication, development and courses and so on. The Instrumentation Bulletin, the quarterly run by WRIC served as an effective communication channel among the USICs and the RICs and also for them (*Figures are given on subsequent pages*).

TRAINING PROGRAMMES AT A GLANCE

No. of Courses conducted : 36

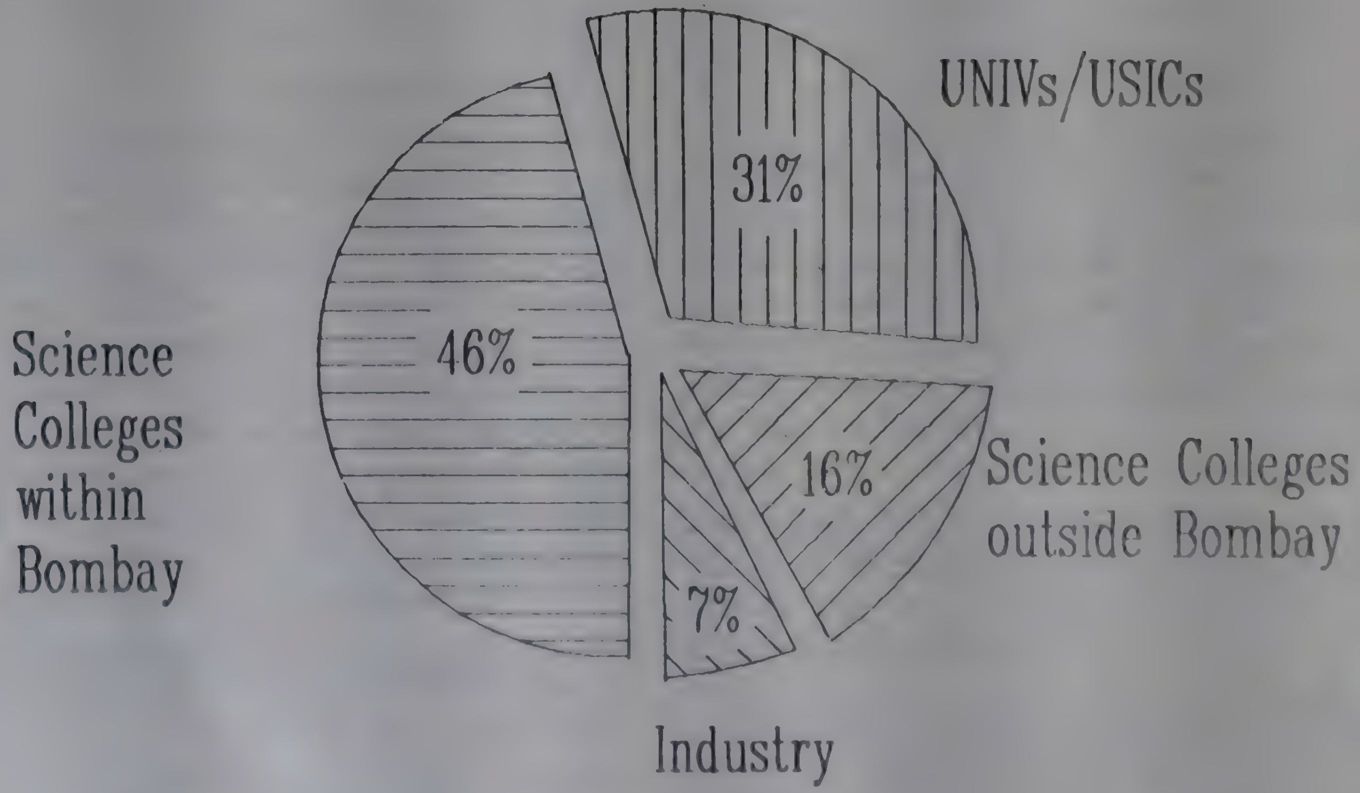
No. of Participants : 937

No. of Participant Days : 10360

No. of Participants from USICS : 288

No. of Participants from outside Bombay : 442

No. of Participants from Industries/Research Institutions : 68



No. of USICs,UNIVs,Institutions served : 43

Fig. 1

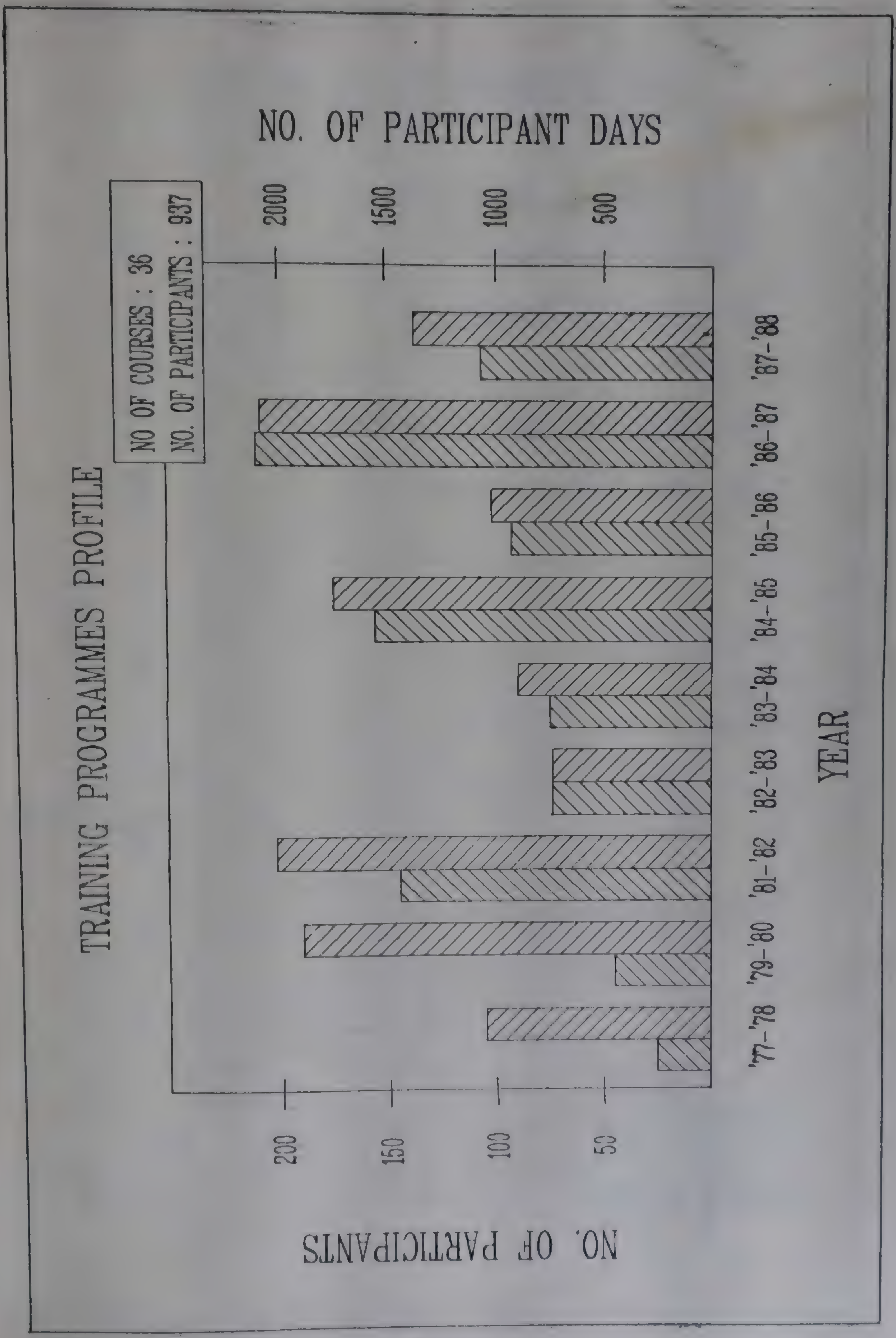

TRAINING PROGRAMMES PROFILE
NO OF COURSES : 36
NO. OF PARTICIPANTS : 937
NO. OF PARTICIPANT DAYS
2000
1500
1000
500
NO. OF PARTICIPANTS
200
150
100
50
'77-'78
'79-'80
'81-'82
'82-'83
'83-'84
'84-'85
'85-'86
'86-'87
'87-'88
YEAR

Fig. 2

MAINTENANCE AT A GLANCE

No. of Electronic/Analytical Instruments repaired	: 556
No. of Optical Instruments repaired	: 140
No. of Maintenance Camps held	: 2
No. of Institutions served	: 63

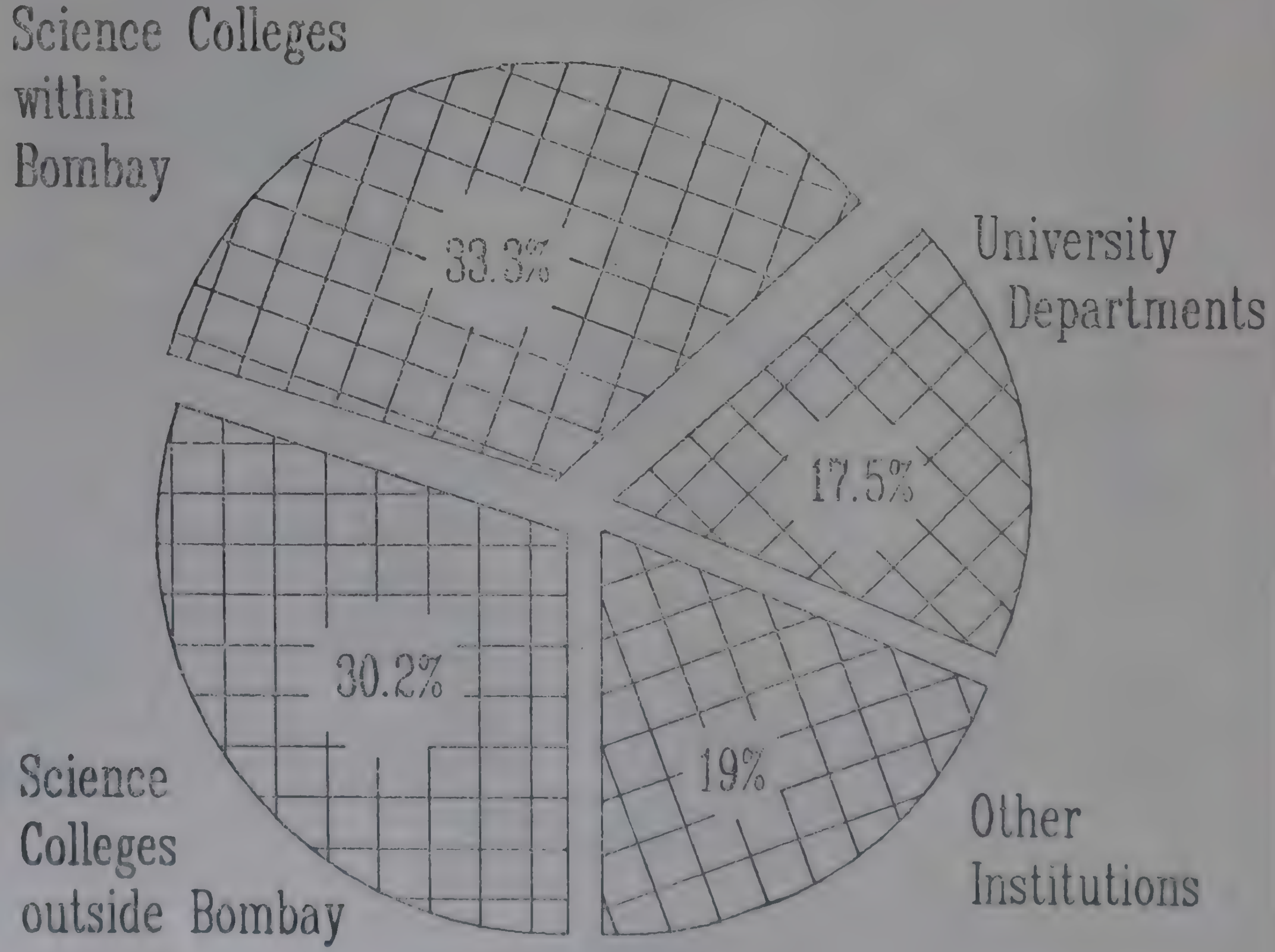


Fig. 3

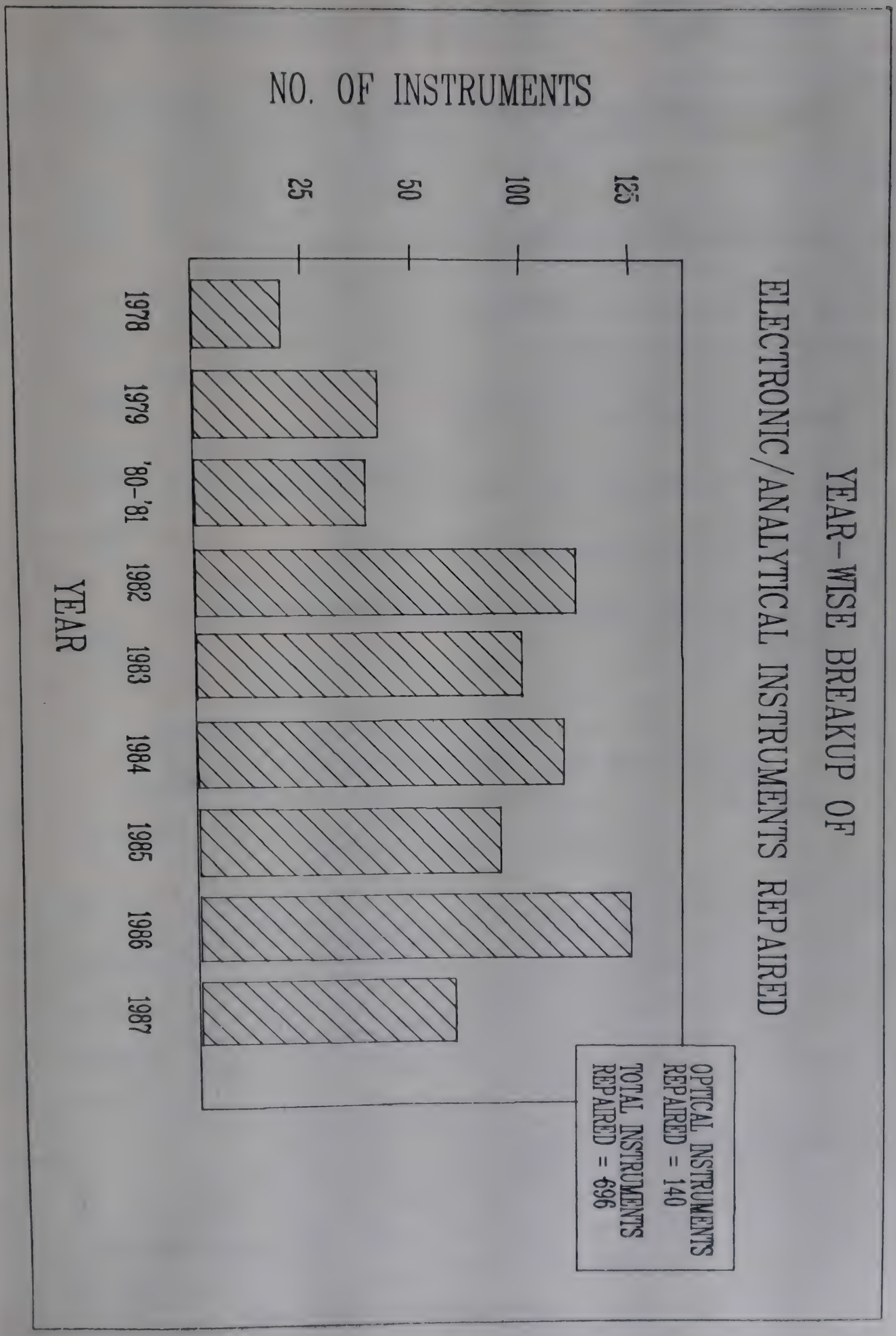

YEAR-WISE BREAKUP OF
ELECTRONIC/ANALYTICAL INSTRUMENTS REPAIRED
NO. OF INSTRUMENTS
25
50
100
125
1978
1979
'80-'81
1982
1983
1984
1985
1986
1987
YEAR
OPTICAL INSTRUMENTS REPAIRED = 140
TOTAL INSTRUMENTS REPAIRED = 696

Fig. 4

DEVELOPMENT/FABRICATION AT A GLANCE

No. of Instruments Developed : 72

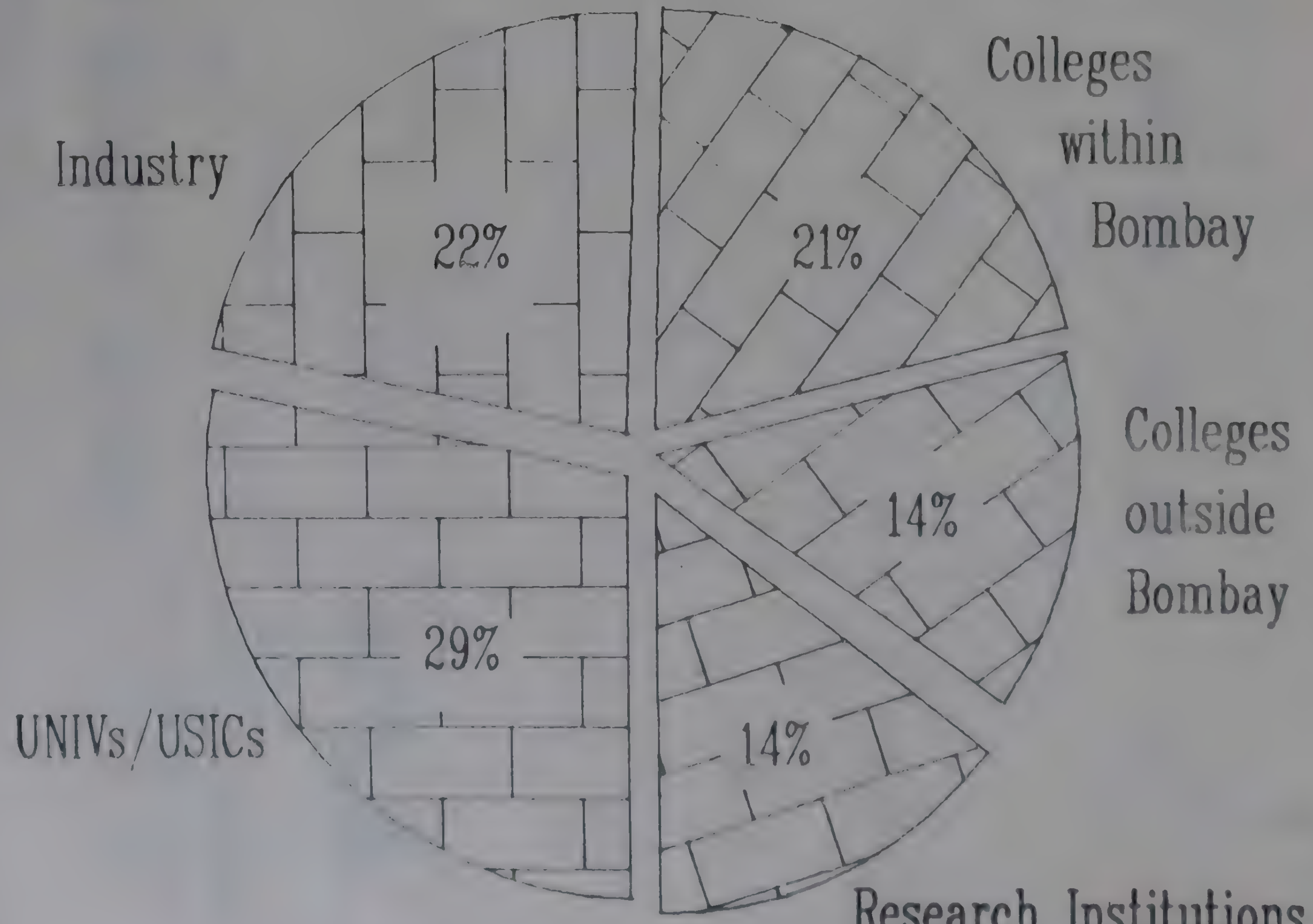
No. of Optical Components/ Subsystems Developed : 28

No. of Instruments Fabricated : 390

No. of Instruments Supplied to Institutions : 305

No. of Optical Components Fabricated : 550

No. of Optical Components Supplied to Institutions : 540



No. of Institutions Served : 86

Fig. 5

University of Bombay

NATIONAL SERVICE SCHEME

Though officially begun in 1969, the NSS activities in the Bombay University really took off in 1972, when the University launched its programme of constructing twentyfive community wells in the tribal areas of Dahanu Taluka to mark the completion of twenty five years of Independence. Since then the University NSS Unit has streamlined its entire working, what with publication of a Manual for Programme Officers and introduction of Work Diary for volunteers, and encouraged academically oriented community service programmes in all directions. The programmes which have now become "normal" are as follows :

(1) Educational Project to provide assistance to school going children of Class IV employees of the University and Colleges.

(2) Functional Literacy.

(3) Children's Programmes for slum dwellers.

(4) Anti-dowry awakening and group marriage ceremonies.

(5) Anti-drug-addiction : preventive and curative measures.

(6) Health and Hygiene in mofussil areas.

(7) Mass-immunization; Leprosy eradication; T.B. Control.

The fresh entrants are given regular and experiential orientation, while evaluation sessions are held to help planning for the year.

The NSS Volunteers have been at the forefront in the relief measures during national calamities. In 1971, the contingent of University students did an excellent job at the Mana Camp in Orissa. Recently, during 1987-88, the volunteers took the lead in streamlining the work of the drought relief camps at Jawhar, Mokhade and Shahpur Talukas of Thane District. 14 Colleges helped in the distribution of water with the help of tankers, supervised functioning of fair price shops and assisted in implementation of the Employment Guarantee Scheme, and deepened the lakes by removing silt. Under the 'Food for Foodless' project, around 24 tons of foodgrains were distributed to 1,232 beneficiaries identified in Jawhar area. The starvation and hunger experienced by those 'have nots' could be felt by the NSS volunteers.

The popularity of NSS programmes is reflected in the fact that whereas the sanctioned strength is 15,700, the applicants numbered 28,000 in 1987.

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Desirable : Proven record of R/D work, teaching, guiding research and management of projects/schemes in areas of analytical, electronic, optical, thermal or thin film instrumentation.

2. **Scientific Officer** for Solid State and Structural Chemistry Unit (DST-IRHPA Programme) (IA//308/24/88).

Essential : Ph.D. in Physics or Chemistry. 3 years (approx.) post-doctoral experience in solid state physics or chemistry and expertise in setting up facilities for measurement of electrical transport and magnetic properties.

Desirable : Knowledge of computer interface with equipment; cryogenics

3. **Scientific Officer** for Instrumentation and Services Unit (X-Ray Diffractometer) (IA/308/26/88).

Essential : PhD in Instrumentation/Physics/Chemistry with 2 years experience in X-ray Diffraction work. Ability to handle X-ray Diffractometer and associated X-ray and electronic instrumentation.

Desirable : Experience with other analytical facilities and teaching/laboratory work.

Emoluments : Post 1 : Rs. 6230/- p.m. in the Scale Rs. 4500-7300; Posts 2 & 3 : Rs. 3146/- p.m. in the scale Rs. 2200-4000.

Details and prescribed application forms can be obtained on request (separate for each post) from the Registrar accompanied by crossed IPO for Rs. 5/- drawn in favour of the Registrar, Indian Institute of Science (free for SC/ST on production of caste certificate from a competent authority), and self-addressed Rs. 5-40 stamped envelope of 28×18 cms size, **before 12 August, 1988.**

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Participation in Higher Education

S. M. Israney*

Introduction

Participion rate is the proportion of the population that takes advantage of some form of higher education. In a developing country like India, with the acceleration in the pace of economic development, demand for learning needs has been increasing. This is clearly indicated in the following statistics.

	1951	1984-85
No. of recognised institutions	2,31,000	7,55,000
Total enrolment	24 million	132 million
National stock of educated manpower	3.8 million	48 million
The enrolment for postgraduate studies	20,000	3,00,000
The enrolment in Science subjects	4,400	73,000
The annual non-plan expenditure on education	Rs. 114 crores	6000 crores
Enrolment in Secondary and Higher secondary levels	10 million (1979-80)	17 million
Enrolment in Higher Education	2.5 million (1979-80)	3.5 million (1985-86)

(Source: 7th Five Year Plan—1985-90, Vol. II p. 252-53)

During the 1950s, educators realised that there would be a very large pool of potential college students during 1960s and 1970s. The reason for this was demographic : the 'babyboom'. In addition to demographic statistics, data showed that the percentage of population attending college had been constantly increasing in normal times. It was predicted that this trend would continue and, when coupled with the increase in the youth population, would bring unprecedented expansion in the demands for college attendance.

Although college enrolments did increase dramatically during 1979-86, there is considerable variance among the states in the percentage of population attending college. States like Maharashtra, Gujarat, West Bengal and Madras have comparatively a bigger share of such enrolment.

Low Participation

But the percentage of increase in participation has however been much lower as compared to the percentage of non-participation to the total of population capable of participating in higher education. There are several significant policy implications attached to the phenomenon of low participation. Those states with a lower participation rate may attempt to offset projected decline in enrolment by developing policies aimed at increasing the rate of participation in higher education. Low participation is important for other reasons also. It suggests the presence of barriers to educational opportunity that prevent participation by citizens who want and should have an opportunity for higher education. Historically, funding for higher education in both the public and private sectors has been related to the number of students in attendance, and therefore, from the view point of college administrators, low participation affects resource availability. Moreover, a low participation rate may effect the economic and social wellbeing of a state because it results in an insufficiently educated labour force that is poorly positioned to respond to emerging economic and social conditions and the growing challenges of high technology.

Aspects of Participation in Higher Education

There are atleast four important aspects of participation in higher education.

(a) *Demographic Aspects*

This aspect focuses on the demographic characteristics of a given population and uses these characteristics to predict some level of participation. Between 1960s and 1970s, large increases in enrolment were predicted because of the high birth rate. There are also other demographic characteristics that have the potential for affecting participation in any given state. One would be the rate of population growth or decline as affected by immigration. Another is the age composition, i.e. movement of a state's population toward middle age.

However, demographic theory and data only describe the potential for enrolment or participation, not the actual participation. There are many unknown factors that bear up on enrolments—for example, economic conditions, federal policies, inflation. state

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**Reader, Economics of Education, Department of Economics, University of Bombay, Bombay-400098* appropriations, and complex social conditions such as the pressures on the community or the civil rights or women's movement.

(b) *Economic Aspects*

The second aspect of participation in higher education focuses on the likelihood of enrolment from an economic point of view by considering life choices available to an individual and their potential costs and benefits and the societal investment of resources in higher education based on the perception of social returns on the investment. This is the so-called "human capital" point of view.

The fundamental economic assumption related to an individual's assessment of the rate of return of an educational decision is essentially a sample application of demand theory. It assumes that more education will be purchased at lower prices than what can be purchased at higher prices. Educational demand theory reflects both supply-and-demand assumptions. One assumption views the decision to enrol in an institution as an investment decision, and the other sees it as a current consumption decision.

The investment approach assumes that an individual will purchase a college education if the present value of expected social and economic benefits resulting from the education exceeds the present cost of education. The expected benefits include the additional lifetime income and the social and intellectual rewards a person might expect to receive.

The cost of a college education must be veiwed comprehensively. It includes direct money outlays in the form of tuition and fees, books, differential living costs, and other outlays incidental to going to college. Enrolment also entails indirect financial burdens in the form of opportunity costs, both private and social. Finally, there are non-monetary costs that include such things as the burden of study and, for some students, the pain of being away from home. An individual facing an enrolment decision according to this version of economic behaviour, presumably makes a decision in the light of expected benefits and costs involved in enrolment.

In the consumption approach, educational services have an immediate value that includes social, intellectual, and athletic activities. Educational demand theory is based on the concept that education confers costs and benefits on the individual and that their relation determines individual behavioural response.

Public expenditure theory is yet another economic dimension that affects explanations of participation in higher education. This theory is relevant because the cost component of educational demand theory is not a truly market-determined function. The true cost of education, for example, is not represented by tuition charges because government expenditures are subsidizing the difference between the actual costs of education and tuition fees. If the benefits to society for any goods or service are greater than the benefits accruable to the individual, private production would lead to a decrease of the benefit from society's viewpoint. As a representative of society's collective demand, government enters the picture to ensure that production will be guided by society's rather than the individuals desires. Goods and services whose production entails such decisions are known as 'merit wants'. Such goods and services are deemed so meritorious that their production is provided for through the public budget either in their entirety or over and above what is provided for through private production. Appropriately enough, education is deemed to be a merit want.

Economic factors are obviously very important to participation in higher education because of their impact on the key decisions made by individuals to enrol and on the decisions made by society to support higher education which affect participation by affecting access. But economic theory related to participation also presents problems that diminish its utility in trying to predict or explain participation. Among the most important of these are inadequate attention to the opportunity costs involved in making the decision to participate in higher education, sampling limitations such as lack of adequate data, too little attention to the role of government, and inadequate recognition of important variables such as motivation, attitudes, and other social and psychological factors.

(c) *Social Aspects*

A third aspect of participation is individual choice. Though not specifically connected to any theoretical framework, there is a large body of literature relating to the social and psychological factors that influence an individual's decision to particiapate in higher education. These fall generally into five categories :

(a) student characteristics such as mental and physical ability;
(b) attitudes and motivation;
(c) parental characteristics such as size and occupation and level of education;
(d) school characteristics such as size and peer influence; and

(e) other characteristics such as socio-economic level and proximity to college.

Among the most important of these determinants are socio-economic status, intelligence, and parental education and attitude.

(d) *Institutional Aspects*

Apart from the above there are institutional factors :

(1) The percentage of the population in a state employed in manufacturing should reflect individual opportunity costs. If there are large numbers of fairly well paid manufacturing jobs available in a state that do not require a college education, citizens will be drawn to the labour market. Therefore, if the percentage of the population employed in manufacturing is high, participation in higher education may be expected to be lower.

(2) The vocational programming of a state is also important. If a state has a well developed vocational education programme at the secondary school level, it may have diverted many potential higher education students away from colleges and universities. The percentage of the school population enrolled in secondary vocational programmes will reflect on the participation of the secondary students in higher education. In addition, since vocational programmes have been expanding into the adult market as have traditional programmes, another way to assess the relationship between vocational programming and participation is to evaluate the percentage of population enrolled in post-secondary vocational programmes. If the percentage of either of these variables is high compared to the total population, then participation in higher education would be expected to be low.

(3) Finally, the relative education level of the state population is also important. Some research has shown that there is a positive relationship between educational level of family members and the decision of a student to enter higher eduation. The higher the educational level of the state's population, the higher will be the participation rate in higher education.

Policy Implications

There are significant implications for public policy based on the higher education participation rate for a particular state, especially for states that have a relatively low rate of participation in higher education. States experiencing poor economic conditions may need to make major changes in their economic base in order to revitalize the economy. Low participation in higher education as it relates to the provision of a trained work force can significantly condition the degree to which change is possible.

Moreover, it is obvious that more research regarding the social and psychological aspects of potential participants is important. Early and current studies necessarily leave unexamined many important questions that bear directly upon participation in higher education and upon programmes to increase such participation. Preparation for higher education is always a personal matter. If effective educational counseling is to occur, greater knowledge is needed about personal values, attitudes, needs, and perceptions.

A more integrative approach to the study of educational participation is needed so that higher education policy formulation and implementation are both comprehensive and effective. Till that need is effectuated, personal income, state revenue levels, and past educational levels of a state population are the critical determinants of the rate of participation in higher education. Accordingly, policies directed toward influencing that rate must affect these determinants in order to achieve positive results. □

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Indian System of Medicine

Centuries ago, the Sanskrit scholars developed the Ayurvedic type of medicine. The Tamils developed siddha type of medicine. We have Unani style of medicine. All these are indigenous in character and must be studied together, said Hon'ble Justice P. R. Gokulkrishnan, Chief Justice of the Gujarat High Court while delivering the Convocation Address at the annual convocation of the Gujarat Ayurved University, Jamnagar. Justice Gokulkrishnan observed that the scholars of our ancient time were more interested in assimilating the knowledge and developing the science rather than nurturing parochial ideas with linguistic barriers. He made a strong plea to cut this gordian knot of linguistic barriers and parochial temperament and studying the literature on medicine—the treasure that is available in various languages. Excerpts

Ayurveda is a real science of life dealing with all its aspects. Its scope is not narrow and bound within watertight compartments. The science of Ayurveda includes all that is essential to make a man not only healthy but also happy. The word 'Ayurveda' is composed of two Sanskrit terms, viz., 'Ayur' meaning 'Life' and 'Veda' meaning the 'Knowledge' and taken together it means the 'Science of Life'. However, in a limited sense it is always used to imply 'The Science of Medicine'. It will be seen from this definition that Ayurveda lays emphasis not only on leading a life which is full of happiness, which implies an individualistic attitude but also leading a life which will be useful to society as a whole. Unless the society becomes happy, it will not be possible for the individual to attain or maintain his own happiness. The individual should always make an effort to subscribe to the happiness of the society and ayurvedic texts are replete with references to the manner in which the society can be kept happy. The Ayurvedic way of treatment also lends support to build up a socialistic pattern of society which is the aim and goal of our avowed aspirations in this democratic society. Thus, social, religious and moral education of an individual as a citizen is included in the science of Ayurveda. In this manner the study of Ayurvedic medicine is more scientific as a science of life than the western medicine. Ayurveda recognises that the man is very powerful both in the causation and cure of diseases.

Emotions like hurry, anger and pride are also treated as diseases since these things affect the health, happiness and longevity of an individual. Nowadays we find that even the western Allopathic style of treatment appreciates these factors and adopts them for their health education. Yoga which is considered to be a branch of Ayurveda is gaining momentum throughout the world. The scientific way of practising yoga is recognised as the sure method of conditioning the body and the mind. The conditioning the body and the mind by such practices of yoga with regular habits and character will make a person live without any ailment. This is the basic trait of Ayurvedic medicine as opposed to the symptomatic treatment which is more prevalent in other types of medicines.

One need not be averse to the sciences which have developed either in the West or in the East. Whatever is given has to be taken and assimilated but that should not stand in the way of research by delving deep into our system and baling out those useful knowledge in the field of medicine and surgery. Such type of colleges established to develop the indigenous medicines often slip into the fold of western medicine forgetting the purpose for which such colleges and universities are established. This is because of the fact that the modern medicine is handy and easy to earn the livelihood and also to treat the patient symptomatically. I do not, for a moment, belittle the scientific advancement in the modern medicine but I am for encouraging side by side the development of our indigenous medicines from which we may some time dig out useful knowledge for treatment of patients suffering from incurable diseases. Basically we all have accepted that the civilisation of our nation, dates back to 5000 B.C. Mohanjodaro-Harappa Civilisation, the Gangetic Valley cultural advancement, the rich treasures in the ancient south have no parallel in the whole world. Our history points out the highest development in Astronomy, medical literature and other sciences in our ancient India. The rich cultural heritage of the East has not been properly focussed. If once such research, more especially, in the field of medicine is taken up, I am sure, we will not only focus our rich tradition to the world but also will be of help to the citizens of the world in solving various problems in different fields. The western scholars like Max Muller and others have appreciated and admired the rich cultural traditions of our nation. But unfortunately we were not able to progress due to the foreign domination up-till we attained independence and it is only now we begin to feel the necessity of making research in this field.

Our ancient medicine developed in various parts of our nation must be studied together. Centuries ago the Sanskrit Scholars developed the Ayurvedic type of medicine. The Tamils developed Siddha type of medicine. We have Unani style of medicine. All these are indigenous in character having connection with each other. There is no watertight compartment except the language involved in it. The scholars of our ancient time were more interested in assimilating the knowledge and developing the science rather than nurturing parochial ideas with linguistic barriers. We must cut this gordian knot of linguistic barriers and parochial temperament and study the various literatures on medicine, which treasure is available in various languages. Fortunately we are still left with scholars who are proficient in Sanskrit, Tamil and various languages which have rich literature especially in the field of medicine. Before it is late we have to make use of those scholars for the purpose of digging out those mines and bringing out useful data for the benefit of the posterity.

There are two schools in Ayurveda. One is called Atreya school which primarily deals with medicine; the other called Dhanvantari School which mainly deals with surgery. No doubt, we are not having much literature given by these scholars. But the fact remains that surgery also was in a developed stage in our nation. As on date we are more on the medicinal side rather than the surgery in our native medicines and that is because of the fact that we are not able to get sufficient data and literature regarding our ancient surgery.

We have many inscriptions to show the practice of ancient medicine in our great nation apart from various inscriptions mentioning the establishment of hospitals with beds. I am happy that this University has affiliated colleges in Ayurvedic Medicine and those colleges have also hospitals with number of beds. It is my cherished desire that there must be separate hospital for our indigenous medicines in every town so that we will be in a position to propagate the usefulness of our ancient medicine. The redeeming feature of the Ayurvedic treatment is that this treats the individual as a whole, apart from the fact that the cost of the medicine is within the reach of lower strata of the society. There is no toxicity or any other side effect in such type of medicines.

The much wanted service in the society is that of the doctors. Dedication and sacrifice is the basic trait of the doctors. Those who have it, I am sure, are bound to succeed in this profession. The bedside manners, the pleasing words, the involvement in the profession and above all the humanitarian approach are some of the essential qualities of the doctors.

The Ayurvedic medicine is still to catch up. Research work is on and unearthing ancient medicine by delving deep into the literature is being carried on by Sanskrit scholars and others. In this stage the doctors who come out of such medical colleges have very great responsibility not only in establishing themselves but also in propagating the usefulness of the Ayurvedic medicine. The research work must be speeded up and the area of sure cure must be founded and practised in order to infuse confidence in the public.

Whatever you may say, the patients will never permit themselves to be experimented upon nor their relatives. Unless we prove the efficacy of the medicine at least in certain spheres, it will be very difficult for A yurvedic Medicine to prosper and to become popular. This is because of the competition and progress which the Allopathic medicine has made in catching the attention of the public. One must strive hard and practise in that line where there is a definite cure or at least definite relief can be achieved. The Doctors who are produced from this University will understand the onerous task before them and involve themselves in the medical practice so as to be of help to the society. It is not earning that makes one's profession a success. It is the benefit that the profession gives to the society which ultimately benefits not only the profession but also the society at large. I am definite the Doctors produced in this University will carry the torch forward and succeed in the profession through their knowledge, dedication and character. The Ayurveda system of medicine must receive from all quarters encouragement and support to regain its past glory and to prove once again that it is an effective instrument to serve the mankind. This could be done by establishing hospitals with beds and with all necessary adjuncts for the same. It is a matter of gratification to learn that more Hospitals are going to be opened and funds are being made available for this purpose. We are convinced that Ayurveda has basic infrastructure and potentiality to redress any ailment of the body and mind. That is why we require adequate publicity so that the citizens of this country and also the people of the world can enjoy the usefulness of this great medical science. I am sure, the governmental assistance would come forward in abundant measure to propagate our Indian medicines not only Ayurveda but Siddha, Unani and medicines akin to the same. ☐

CDS/ISIS Software Package

Institution of Information Technology (INFOTEK) recently organized a Workshop on "CDS/ISIS Software Package" at Central Leather Research Institute, Madras. The Workshop was co-sponsored by Department of Scientific and Industrial Research (DSIR), New Delhi, under its NISSAT (National Information System for Science and Technology) programme and Central Leather Research Institute (CLRI) under its NICLAI (National Information Centre for Leather and Allied Industries) programme.

While welcoming the participants, Dr. V.A. Kamath, President, INFOTEK, traced the achievements and the developments taking place in the area of high technologies such as computer, micrographics, telecommunication, etc. in India and abroad. He said that rapid growth of computerisation in India had created an ever-increasing demand for personnel capable of handling computers. He stressed the need of computerising information activities of Indian Library and Information Centres for effective dissemination of information.

Dr. K. Venkatasubramanian, Vice-Chancellor, Pondicherry University, in his inaugural address, reviewed briefly the world of computerised library and scientific information system which is poised to enter the 21st Century. He also took the opportunity to point out that the Pondicherry University, was in the process of setting up a modern library fully equipped with the latest library and information systems. He also traced the historical evolution in the field of computer-based library system and CDS/ISIS software. He proposed that there should be a net-working of libraries in India for effective use of information. Introduction of CDS/ISIS sosftware package for computerisation of library and information services in India was a milestone in the history of library development, he added.

Dr. R.B. Mitra, Director, Central Leather Research Institute, in his presidential address, explained the importance of the CDS/ISIS software package for the library and information work and stressed the need of putting it into practice immediately after the training.

There were 20 participants in the Workshop, 11 from Madras and the rest from Ahmedabad, Bangalore, Bombay, Calcutta, Delhi, Pune and Madurai.

The Workshop comprised some background lectures but emphasis was mainly on practicals in the form of hands on experience on computers. The topics covered were : introduction to computers, MS-DOS, file organisation, importance of database and its creation, CDS/ISIS micro version, ISIS, ISISDEF, ISISINV, ISISUTL, ISISPRT, ISISEXC, Search formulation and language, problems in using CDS/ISIS, etc. There were lectures on PERHOL (Periodical Holdings) Database and UNIX. The participants were trained to create their individual sample databases using the CDS/ISIS Package.

The participants were given an evaluation questionnaire for evaluating the Workshop. They provided feedback on the usefulness of the Workshop along with their suggestions for improvement. The reaction of the participants was very encouraging.

Dr. P.A. Mohanrajan, University of Madras, delivered the valedictory address and gave away the Certificates.

Dr. F.J. Devadason, Assistant Director (CLRI) and Vice-President, (INFOTEK) and Shri R. Vengan, Scientist (CLRI) and Secretary (INFOTEK) acted as Course Director and Course Convener respectively.

Indira Awaas Yojana

A two-day National Workshop on Low-Cost Technologies relevant to INDIRA AWAAS YOJANA and Primary School Building construction under NREP/RLEGP was recently organised by the Regional Housing Development Centre, Institute of Technology, Banars Hindu University, Varanasi. Sponsored by the Department of Rural Development, Ministry of Agriculture, Government of India, the Workshop was inaugurated by Shri Rajeev Ratan Shah, Commissioner, Varanasi Division and was presided over by Professor R.P. Rastogi, Vice-Chancellor, B.H.U. Shri B.S.S. Murthy, Adviser (Engg), Department of Rural Development, Government of India and Shri M.P. Mishra, Commissioner, U.P. Rural Housing Board, Lucknow also attended the inaugural function.

An exhibition depicting the use of various locally available low-cost materials in the State and many new low-cost construction technologies was put up on the occasion. A model house with kutcha bricks and a hut with different types of tiles were erected in the existing low-cost Demonstration House on the campus.

During the Demonstration, emphasis was laid on the type of Kutcha mud bricks and stone blocks instead of burnt readymade bricks in rural houses which are labour intensive and also cost effective. Methods of water proofing of mud walls with bitumen-oil mixture, rice husk mixed with mud and cow dung and also by polymer coating were demonstrated. Different low-cost appropriate leak proof and durable roofing materials were shown to the participants and the officials and a live demonstration of casting Prefabricated Arched Brick Panels and R.C. Beams developed by our Centre, was also held.

The Workshop has given a lot of input to this on-going National Programme of INDIRA AWAAS YOJANA and many practical suggestions were put forward during the deliberations for its better implementation in the state, both administratively and technically. The following major points were emphasised :

(1) The Scheme should be labour oriented so that it provides maximum employment opportunity to the scheduled castes, scheduled tribes and freed bonded labours.
(2) Locally available materials should be used and bricks, etc. be prepared at the site of construction itself.
(3) The houses should be cost effective, durable, leak & damp proof needing minimum maintenance and acceptable to the beneficiaries.
(4) Motivation is needed to create awareness amongst the beneficiaries towards sanitation and better environment.
(5) The beneficiaries should be involved in the construction of houses under Indira Awaas Yojana.

Around 130 participants comprising Executive Engineers, Assistant Engineers, Project Directors, Junior Engineers and Block Development Officers from various districts of Uttar Pradesh attended the workshop .

Training the Talented

The University Grants Commission (UGC) has approved a scheme for opening of an ideal college for undergraduates in the University of Poona and Panjab University, to give special training for the talented students. This was disclosed by Dr. V.G. Bhide, Vice-Chancellor, Poona University recently.

The students selected for such special education would have university professors as their teachers under the experiment. The batches selected could be from 200 to 250 each at Poona or Chandigarh. The experiment would first take in science faculty students only and later be extended to students of other faculties. The special college would be controlled by the UGC but run by the two respective universities.

Dr. Bhide said this special college for the undergraduate science faculty students would be located on behalf of the university in Pimpri-Chinchwad area.

The UGC has also approved another special project for Poona University of setting up of a regional science laboratory. This would be computerised and would have knowledge of all science faculty books. This is being located in Pune to be run by the University of Poona and to be financed as a pilot project by the UGC.

News from Agril. Varsities

Environment & Sustainable Nutrition Security

Dr. M.S. Swaminathan, President, International Union for the Conservation of Nature and Natural Resources, called for evolving a policy for preserving the country's flora and fauna. He said there was a need for an action plan involving the public, professionals and political leaders for conserving and utilising the national wealth. Agricultural assets were in various stages of degradation. There was time still to reverse the process. Dr. Swaminathan was delivering the first Dr M.S. Randhawa Memorial Lecture Series at Punjab Agricultural University.

Speaking on "Environment and Sustainable Nutrition Security", Dr Swaminathan said block-level land-management practices with appropriate attention to conservation, restoration of degraded land sustainable intensification for agricultural purposes was the need of the hour. Rain water and aquifer (ground water) management, wetland management, conservation of coastal mangroves and sustainable use of surface water, all required attention. The country's vast river and ocean resources needed to be kept free of pollution and siltation.

Dr Swaminathan stressed on a national action plan for the conservation of forest ecosystems, particularly in the Himalayas, the Western Ghats, the Vindyas and the Eastern Ghats. He pointed out that besides atmospheric pollution, the long-term consequences of deforestation and increased consumption of fossil fuels were now receiving serious global attention. A recent global conference held at Toronto in Canada considered the implications of the changing atmosphere for global security.

Dr. Swaminathan said nutrition security implied physical and economic access to a balanced diet and safe drinking water. "While we have attained a degree of food self-sufficiency, we are a long way off in the matter of developing a national nutrition security system," he said.

Statistically, the country had to produce 230 to 250 million tonnes of foodgrains. It had increased its capacity to 75 million tonnes per year during the past 20 years. It had to repeat the performance during the next 12 years as well to meet the needs of rising population.

He also stressed on the need to control animal population. He however said that animal population suffered from undernutrition and animal fodder and feed security system was yet to be developed. "We need to produce each year about 700 million tonnes of livestock fodder," he said.

Laying emphasis on economic security, Dr. Swaminathan said unless 200 million additional jobs were created in rural areas within the next 12 years, there would be a big cut in the earnings of rural families who would be forced to seek work in towns and cities.

AIU News

Standing Committee to Meet at Bombay

The 217th meeting of the Standing Committee of the Association of Indian Universities (AIU) will be held at Bombay on 6th August, 1988. Dr. P.V. Salvi, Vice-Chancellor, Marathwada Krishi Vidyapeeth and President of the Association of Indian Universities will preside.

A number of important items will come up for discussion at the meeting. It will consider requests from Indira Gandhi Krishi Vishwavidyalaya, Raipur and the University of Agricultural Sciences, Dharwar for grant of Provisional Membership of the Association. Suggestions made at the meeting of the Standing Committee on Foreign Students set up by the Ministry of External Affairs will also come up for discussion at the meeting. Suggestions inter-alia include simplification of the procedure for the AIDS tests on foreign students, drawing up a list of universities where foreign students could be admitted on the basis of available resources in terms of academic staff, appropriate courses, accommodation, etc. Another suggestion pertains to the introduction of a Language Proficiency Course in the regional language concerned where the foreign students were studying to help them pick up conversational language and move about freely. The Committee will also have for its deliberations a reference from the University Grants Commission (UGC) as to the opinion of the Association on the departure made in the Acts of Telugu University, Hyderabad and the University of Health Sciences, Vijayawada that the Chief Minister of Andhra Pradesh shall be the Chancellor of these Universities.

The Standing Committee will also consider the proposal received from the Indian Council of Medical Research (ICMR) for an Inter-University debate on the subject "Would legislation prohibiting Indian residents from having sexual intercourse with foreigners and visiting non-resident Indians be violative of the Constitution-

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Request for prospectus and application form accompanied by a crossed Indian Postal Order for Rs. 10/- drawn in favour of the Secretary, Association of Indian Universities and a self addressed stamped envelope (Rs. 2/-) should reach the Director (Research), Association of Indian Universities, AIU House, 16 Kotla Marg, New Delhi 110002. Last date for receipt of applications is **15th September** for non-sponsored and **26th September, 1988** for sponsored candidates.

al Right to Privacy?" It will also consider suggestions received from member universities regarding the modalities for Inter-University Exchange of Teachers to counteract inbreeding. Universities' involvement in the Mass Programme for Functional Literacy Mission is also likely to come up for the consideration of the Committee.

The Standing Committee will also have for its consideration the reports of sub-committees like the Cultural Committee that met on 29th July at Delhi, Sub-Committee on Introduction of Productivity Centres at Universities that meets a day earlier on 5th August and the Sports Committee that will meet on 6th August. Thoughtful deliberations resulting in meaningful recommendations are expected to take place at the meeting.

Public Relations in Educational and Research Institutions

The Association of Indian Universities, in collaboration with the Tata Institute of Social Sciences and Bharatiya Vidya Bhawan, Bombay, will organise a Group Discussion-cum-Orientation Programme for Public Relations Officers working in educational and research institutions from 7th August to 12th August, 1988. About 50 persons including Public Relations Officers, Assistant and Deputy Registrars in charge of PR activities in universities, Deans of Students, Heads of Publication Divisions and PR men in CSIR laboratories and Agricultural Research Stations, are expected to participate.

Mr. Ram Mohan Rao, Principal Information Officer, Press Information Bureau, Govt. of India, will inaugurate the programme. Dr. P.V. Salvi, Vice-Chancellor, Marathwada Krishi Vidyapeeth and President of AIU would preside over the inaugural function. Mrs. Adity Syam, President, Public Relations Society of India and former Presidents, Mr. Ajit Gopal, Mr. Narsimha Reddy and noted Public Relations practitioners like Mr. Anil Basu will moderate different sessions. Prof. M.R. Dua and Prof. Pillai, from Indian Institute of Mass Communication, New Delhi and Prof. Bashiruddin, Head of Department of Journalism, Osmania University, Hyderabad would be the Chief panelists. The topics to be discussed at length are Modern Technology in Public Relations, Development of Academic Corporate Culture, Visual Communication, Media Relations, Public Opinion Research Specialised News, Advertisement and Publicity.

At the conclusion of the deliberations, the Group will suggest guidelines for development of public relations activities in educational and research institutions.

It is also proposed to have field visit to Goa in continuation of the programme.

News from Abroad

Commonwealth of Learning

The Heads of Commonwealth Governments at their meeting at Vancouver in 1987 agreed to create a Commonwealth institution for cooperation in distance education. The Working Group constituted for the purpose has since made detailed proposals which are now under consideration of the Commonwealth governments. To be named, "Commonwealth of Learning", in case the report of the Working Group is approved, the institute will be set up with Headquarters in Vancouver. The objective of Commonwealth of Learning is to promote human resource development through a sharing of Commonwealth distance education experience and resources. It will have functions in the exchange of information about distance education, in staff training and institutional development, and in promoting the sharing of distance education materials.

Positions Available

The Commonwealth Secretariat has recently advertised the positions of President (Chief Executive) and other senior staff for the Commonwealth of Learning. The President, who will be the Executive Head, will be expected to develop and oversee cooperative projects involving educational institutions in a network throughout the Commonwealth and will secure support from governments and other sources for the expansion of this work. The President will report to the Board of Governors, drawn from Commonwealth countries. Educational leaders of international stature from Commonwealth countries who combine international experience, an understanding of the application of distance education in development, excellent interpersonal skills, and demonstrated ability in government relations, management and fund raising are eligible to apply. They must have energy, initiative and innovative ability to launch a new organisation.

Senior professional posts will be at the level of departmental head reporting direct to the President. Two or three posts are likely to focus on distance education cooperation in relation to particular subjects and disciplines and their incumbents will be responsible for identifying needs, locating courses and materials to meet them, arranging access and adaptation, and where necessary promoting the development of new materials for shared use. Likely areas for initial attention include science/mathematics; accountancy/management; professional areas like health, education, engineering; and agriculture/rural development. Applicants for these posts should have a strong professional base in an appropriate disciplinary area as well as experience of distance education.

Other posts will be oriented to distance education techniques and organisation including promoting of training, application of communications technology in countries whose circumstances vary, consultancy services in developing distance education systems and institutions. Successful candidates will have experience of the application of distance education methods in more than one country, including developing countries.

The administrative/finance officer will be responsible for developing management procedures and the financial framework for the new organisation and will require experience of public administration and financial management preferably in an international context.

Further details can be had from Mr. Peter RC Williams, Director, Education Programme, Human Resource Development Group, Commonwealth Secretariat, Marlborough House, Pall Mall, London SW1Y 5HX.

The Last date for applications/nominations to reach the Secretary General, Commonwealth Secretariat is 31 August, 1988.

Attention Scientists and Technologists

Indian Expertise in Science and Technology

The Research Cell in Economics of Education of the Association of Indian Universities is conducting a survey of Indian expertise in science and technology in the University sector. It is proposed to prepare a comprehensive database of the skills, knowledge and facilities of the university level institutions as well as a directory of experts in various disciplines of science and technology. The survey is also intended to catalogue the expertise and current research work of Indian scientists and technologists in various fields of science and technology, and will be used as an input for the compilation of a comprehensive database on the scientific and technical manpower in the country. The database will provide a ready reference to the industry, commerce and allied sectors of Indian economy for identifying experts in the relevant fields.

The scientists and technologists engaged in teaching and research in the universities and university level research institutions in India **at the lecturer or equivalent and above levels only** are requested to fill-up the prescribed form, which can be had from the undersigned. The completed form should be returned latest by **September 30, 1988.**

The responses from the academic and research staff are solicited, and their cooperation would be highly appreciated in our venture to build up a comprehensive database.

For the prescribed form, kindly write to:

M M Ansari
Joint Director
Research Cell, Economics of Education
Association of Indian Universities
AIU House, 16 Kotla Marg
NEW DELHI 110 002

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AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertations as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A List of Research Scholars Registered for Doctoral Degrees of Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Ajan, K. S. *To study the ideals of Banach lattices.* Kerala. Dr. K.I. Koshy, Pool Officer, Department of Mathematics, University of Kerala, Trivandrum.

2. Ajitha, G. *Some of the properties of regular semigroups.* Kerala. Dr. R. Veeramony, Prof, Department of Mathematics, University of Kerala, Trivandrum.

3. Chettiar, N. Ganapathy. *Some problems regarding homological properties of modules and cancelation of projective modules and related topics.* Kerala. Dr. M. I. Jinnah, Reader, Department of Mathematics, Univerrity of Kerala, Trivandrum.

4. Geetha, K. *To explore the conditions under which subspace of LCE. F become Banach lattices of operators.* Kerala. Dr. K.I. Koshy, Pool Officer, Department of Mathematics, University of Kerala, Trivandrum.

5. Muraleedharan, S. *Theory of regular semi-groups.* Kerala. Dr. R. Veeramony, Prof,, Department of Mathematics, University of Kerala, Trivandrum.

6. Patil, G. H. *A study of the identification problems in mathematical models of structural systems.* Shivaji. Dr. M.S. Prasad, Prof. and Head, Department of Statistics, Shivaji University, Kolhapur.

7. Roy, N.J. Jacob. *The positive operations between Banach lattices with emphasis on their spectra.* Kerala. Dr. K. I. Koshy, Pool Officer, Department of Mathematics, University of Kerala, Trivandrum.

Statistics

1. Dhandra, B.V. *Stochastic inventory models for substitutable items.* Shivaji. Dr. M. S. Prasad, Prof. and Head, Department of Statistics, Shivaji University, Kolhapur.

Chemistry

1. Abdus Sattar. *Synthetic studies in natural products.* Shivaji. Dr. R.B. Mane, Reader, Department of Chemistry, Shivaji University, Kolhapur.

2. Mathur, Madhvi. *Structural, thermoanalytical and antimicrobial studies of metal chelates of benzohydroxamic acids.* Devi Ahilya. Dr. Farooqui, Prof., Department of Chemistry, Islamia Karimia College, Indore.

3. Mishra, Namita. *Kinetics and equilibria studies of electron transfer reactions of alditols and metal cations.* Devi Ahilya. Dr. A.G. Fadnis, Prof., Department of Chemistry, Holkar Science College, Indore.

4. Panicker, Sreelatha S. *Characterisation and functionality studies on solid propellant binders.* Kerala. Dr. K.N. Ninan, Head, Analytical and Spectroscopy Division, V.S.S. C., Trivandrum and Dr. C. G. Ramachandran Nair, Prof. and Head, Department of Chemistry, University of Kerala, Trivandrum.

5. Sharma, Narendra Kumar. *Electrochemical and thermal properties of some typical solids of Indore Region.* Devi Ahilya. Dr. P. V. Khadikar, Head, School of Chemistry, Vigyan Bhawan, Khandwa Road, Indore and Dr. D.D. Dube, Soil Survey Officer, Salt Affected Soils Project, College of Agriculture, Indore.

6. Suri, Parvinder. *Synthesis and characterization of some first row transition metal salicyl hydrazides.* Devi Ahilya. Dr. M.A. Farooqi, Principal, Islamia Karimia College, Indore.

7. Tomar, Govind Singh. *Studies on the chemical composition of common feeds and fodders of Malwa Region of Madhya Pradesh.* Devi Ahilya. Dr. P.T. Malse, Prof. and Head, Department of Chemistry, Holkar Science College, Indore and Dr. D.D. Dube, Soil Survey Officer, Salt Affected Soils Project, College of Agriculture, Indore.

Earth Sciences

1. Sabale, V. P. *Petrographic palyno stratigraphic and geothermometric studies around Pasara-Chelvai area of Godawari Valley, A.P.* Shivaji. Dr. R.R. Patil, Head, Department of Geology, Shivaji University, Kolhapur.

BIOLOGICAL SCIENCES

Anthropology

1. Jibonkumar Singh, S. *Genetic micro differentiation in the Meitei population groups of Manipur and other States of North East India : A study of micro evolutionary change.* Manipur.

Biochemistry

1. Anil Kumar, N. *Studies on the interactions of hepatocytes with the extracellular matrix macromolecules.* Kerala. Dr. P.R. Sudhakaran, Reader, Department of Biochemistry, University of Kerala, Trivandrum.

2. Asha Kumary, L. *Nictotine administration and lipo protein metabolism in rats.* Kerala. Dr. P. L. Vijayammal, Reader, Department of Biochemistry, University of Kerala, Trivandrum.

3. Elias, Merina. *Role of extracellular matrix on the biochemical activity of hepatocytes in culture.* Kerala. Dr. P.R. Sudhakaran, Reader, Department of Biochemistry, University of Kerala, Trivandrum.

4. Jose, Geena Alice. *Comparative biochemical analysis of leaf and tuber proteins of two varieties of tapioca (one tasty and another ordinary) Manihut esculenta cultivated in Kerala.* Kerala. Dr. K. T. Augusti, Prof., Department of Biochemistry, University of Kerala, Trivandrum.

5. Kumud Kumari. *Biochemical effects of sulfoxide amino acids isolated from onion, Allium cepa Linn on experimental animals.* Kerala. Dr. K.T. Augusti, Prof., Department of Biochemistry, University of Kerala, Trivandrum.

6. Laloraya, Malini. *The role of free radicals in implantation.* Devi Ahilya. Dr. M.M. Laloraya, Head, School of Life Sciences, Devi Ahilya Vishwavidyalaya, Indore.

7. Manoj, G. *Dietary fiber and metabolism of lipids and glyco conjugates.* Kerala Dr. S. Leelamma, Reader, Department of Biochemistry, University of Kerala, Trivandrum.

8. Nageswari, K. *Investigations on inositol lipids in liver.* Kerala. Dr. Venugopal P. Menon, Reader, Department of Biochemistry, University of Kerala, Trivandrum.

9. Philip, E. Sussy. *Investigations on the extracellular matrix of the mammary gland.* Kerala. Dr. P.R. Sudhakaran, Reader, Department of Biochemistry, University of Kerala, Trivandrum.

10. Radhakrishna Pillai, G. *Studies on ascorbic acid-2 sulphate.* Kerala. Dr. P.L. Vijayammal, Reader, Department of Biochemistry, University of Kerala, Trivandrum and Dr. M. Indira, Technical Officer, Department of Biochemistry, University of Kerala, Trivandrum.

11. Vijayalakshmi, P.B. *Investigations on pesticide toxicity in iron deficiency.* Kerala. Dr. K. Saraswathy Devi, Reader, Department of Biochemistry, University of Kerala, Trivandrum.

Microbiology

1. Kheda Singh. *Physiological and biochemical studies on the host parasite relationship between Narenga prophyrocoma and Ustilago consimilies.* Manipur.

2. Malhotra, Shramja. *Microflora associated with decay in livine trees of Picea smithiana wall boiss.* HP. Dr. T.N. Lakhanpal, Department of Biosciences, Himachal Pradesh University, Shimla.

3. Thounaojam, Basundhara. *Investigation on the biochemical and physiological aspects of the wood rotting fungus Clitocybe sp. LN tek-tek-pal and its host pathogen relationship.* Manipur.

Botany

1. Anita Devi, H. *Cytotaxonomic studies on orchids from Manipur.* Manipur.

2. Bhubaneshwari Devi, Mr. *Studies on the biology and control of certain major insect pests of mango in Manipur.* Manipur.

3. Chaman Lal. *Wood anatomical characteristics of timbers used for packaging.* HP. Dr. P.K. Khosla and Dr. M.K. Seth, Department of Biosciences, Himachal Pradesh University, Shimla.

4. Damayanti Devi, M. *Induced radiotoxicity in pineapples to improve preservation.* Manipur.

5. Gupta, Krishan Chand. *Tracheid length variation in blue pine Pinus wallicheana A.B. Jackson.* HP. Dr. M.K. Seth, Department of Biosciences, Himachal Pradesh University, Shimla.

6. Jajoo, Anjana. *Role of anions in photosynthetic electron transport.* Devi Ahilya. Dr. S. Bharti, Reader, School of Life Sciences, Devi Ahilya Vishwavidyalaya, Indore.

7. Kameshwar Singh, A. *Genetics of alkaloids producing solananeceous plants of North Eastern India.* Manipur.

8. Khare, Mamta. *Studies on the influence of light and plant hormones on the chlorophyll anthocyanin ratios.* Devi Ahilya. Dr. K. N. Guruprasad, Reader, School of Life Sciences, Devi Ahilya Vishwavidyalaya, Indore.

9. Khumanthem, Umabati. *Physiological significance of potassium in indigeneous maize, Zeamay.* Manipur.

10. Lorho, M.K. *Effect of N.D. and K on the yield, nutritional status and fossil quality of capeicm crops.* Manipur.

11. Phulari, S.S. *Cytological and physiological studies in chillies.* Shivaji. Dr. B.A. Patil, Principal, Willingdon College, Sangli.

12. Radzirani Devi, W. *Effect of burning on the structure and dynamics of grassland ecosystem of Manipur.* Manipur.

13. Samvatsar, Swati. *The floristics and biological spectrum of Jhabua District, M.P. with notes on ethnobotany.* Devi Ahilya. Dr. V. B. Diwanji, Prof., Department of Botany, Holkar Science College, Indore.

14. Sud, Keshav Chander. *Morphological and embryological studies in some taxa of asteraceae.* H.P. Dr. S.K. Sood, Department of Biosciences, Himachal Pradesh University, Shimla.

Zoology

1. Devanath, A.K. *Studies on the biology, host parasite relationship and control measure of uzi fly in Manipur.* Manipur.

2. Dhiren Singh, L. *The chromosomal studies in fresh water cypriniel and cobitiel fishes.* ni Manipur.

3. Dhiren Singh, N. *Studies on the biology of endemic cyprinial fishes of Manipur.* Manipur.

4. Homeshwor Singh M. *Cytochromae P-450 system in fish : Their role in adaptation to pollution.* Manipur.

5. Jaiswal, Kiran. *Taxonomical and histochemical studies on nematodes of some carnivorous vertebrates from Himachal Pradesh.* HP. Dr. D.C. Kalia, Department of Biosciences, Himachal Pradesh University, Shimla.

6. Kanungo, Tanuja. *Effects of radiation on some haematological and biochemical parameters in a mammal.* Devi Ahilya. Dr. Rampal Singh, Prof. and Head, Department of Zoology, Holkar Science College, Indore.

7. Mema Devi. *The study of chromosomes by differential staining in some fishes other than corps and loaches.* Manipur.

8. Nilakanta Singh, N. *Taxonomic studies on the odonate fauna of Manipur.* Manipur.

9. Premila Devi, O. *Analysis of chromosome during mitosis and meiosis in Tasar and eri silkworm.* Manipur.

10. Ranabir Singh. *Morpho-histology of the digestive, reproductive systems and certain aspects of osthology of some fresh water cyprimoids in Manipur.* Manipur.

11. Sadani, Neena. *Limnological studies on Sirpur tank, Indore with special reference to feasibility for fish production.* Devi Ahilya. Dr. D.S. Thakar, Prof., Department of Zoology, Holkar Science College, Indore.

12. Sanahanbi Devi, L *Endocrine physiology of amphibia.* Manipur.

13. Verma, Nandini. *Studies on the histopathological, histochemical and biochemical changes in certain organs of a mammal after ratiation.* Devi Ahilya. Dr. D S. Thakar, Prof., Department of Zoology, Holkar Science College, Indore.

14. Vidyarani Devi, W. *Reproduction and behaviour biology of the Chinese dove Streptopnia chinemses.* Manipur.

Agriculture

1. Upadhyay, M.S. *Study of the effect of four levels of phosphorus on soyabean and soyabean+pigeonpea intercropping system and its residual effect.* Devi Ahilya. Dr. Y.M. Upadhyaya, Senior Scientist (Retd), I.A.R.I. Regional Station, Indore.

Medical Sciences

1. Harikumar, C. *A critical study of infants of diabetic mothers.* Kerala. Dr. N.S. Suguna Bai, Prof, and Head, Department of Child Health, S.A.T. Hospital, Medical College, Trivandrum and Dr. Elsie Philip, Principal, Medical College, Trivandrum.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities.

PHYSICAL SCIENCES

Mathematics

1. Bhattacharyya, Sikha. *Some applications of perturbation techniques in Plasma Physics.* Calcutta.

2. Dange, Snehal Madhukar. *A study of some properties of Generalized Stieltjes Transform.* Shivaji. Dr. M.S. Chaudhari, Department of Mathematics, Shivaji University, Kolhapur.

3. De, Uday Chand. *Some types of Riemannian spaces.* Calcutta,

4. Deo, Shridhar. *Some problems of physical distributions in Robertson Walker universe.* Manipur. Dr. R.K. Tarachand Singh, Assoc. Prof., Department of Mathematics, Manipur University, Imphal.

5. Dhanapal, C. *Numerical solutions of some problems of flow and heat transfer in micropolar fluids.* Roorkee

6. Patel, Gokulananda. *Study on computational aspects of solid transportation problem.* Sambalpur. Dr. C. Das, Asstt. Prof., Department of Mathematics, R.E. College, Rourkela.

7. Sharma, Suresh Chand. *Integral transforms and their applications.* Rajasthan. Dr. M.C. Gupta, Prag Villa, B-63 University Marg, Bapu Nagar, Jaipur.

8. Syeda Lateef Unnisa Begum. *Analysis of mathematical models to problems in life science.* Osmania.

Statistics

1. Rout, Udayanath. *Some properties of a generalized discrete distribution : The generalized Poisson distribution.* Utkal.

Physics

1. Borkar, Bhupesh Tulshiram. *Magnetic, structural and other associated properties of magnetoplumbite ferroxides*

Nagpur. Dr. D.K. Kulkarni, Institute of Science, Nagpur.

2. Das, Mochiram. *Study of baryons in an independent quark model approach.* Utkal.

3. Karmakar, Suprabha. *Investigation on the magnetic, optical and thermal properties of some rare-earth crystalline complexes.* Calcutta.

4. Khurana, Indira. *Elastic and inelastic scattering of various projectiles with hydrogen and helium atoms.* Roorkee.

5. Kulkarni, Vasant Ramchandra. *Structural, electrical and magnetic study of some mixed ferrites.* Shivaji. Dr. A.S. Vaingankar, Reader, Department of Physics, Shivaji University, Kolhapur.

6 Kundu, Himansu Kumar. *Study of lyoluminescence of some biological crystals using different radiations.* Calcutta.

7. Mohanakumar, K. *An investigation of the influence of solar cycle on middle atmospheric temperature.* Kerala. Dr. S. Devanarayanan, Reader, Department of Physics, University of Kerala, Trivandrum.

8. Satheesh Kumar, M.K. *Photoacoustic effect : Some applications in Laser technology.* Dr. C.P. Girijavallabhan, Prof ., Department of Physics, Cochin University of Science and Technology, Cochin.

9. Saxena, Atul. *Measurement of heavy iron ranges in elemental and complex media using solid state nuclear track detectors.* NEHU. Dr, K.K. Dwivedi, Department of Chemistry, North Eastern Hill University, Shillong.

10. Shashi Prabha. *Analysis of gamma spectra of different isotopes.* Magadh.

11. Syam Sundar, Nulu. *Infrared, Raman, ultraviolet and photacoustic spectra of certain substituted toluenes and phenols.* Andhra.

12. Todkar, Maruti Mahadeo. *Electrical, magnetic and x-ray diffraction study of* $Cu_{1}-\partial Fe_{2}+\partial O^{4}$ *ferrite system.* Shivaji. Dr. A.S. Vaingankar, Reader, Department of Physics, Shivaji University, Kolhapur.

13. Veeraswamy Naidu, Seatala. *Isochronal annealing study on radiation induced defects in metals-Mo, Ni and N6-by positron annihilation.* Calcutta.

14. Venkateswar Rao, J. *Satellite radio beacon studies of the ionosphere.* Osmania.

15. Viswanathan, K. *Raman and IR studies of certain double anion compounds and tetrameta phosphates.* Kerala. Dr. G. Aruldhas, Prof., Department of Physics, University of Kerala, Trivandrum.

16. Viswanathan, K.S. *Study of the electrodynamics of the equatorial electroject.* Kerala. Dr. C.A. Reddy, Director, SPL, VSSC, Trivandrum.

Chemistry

1. Agarwal, Rakesh. *Studies on diazoketones : Action of diazoalkenes on acid chlorides with two or more sites of reactivity.* S. Gujarat. Dr. P. Bahadur, Department of Chemistry, South Gujarat University, Surat.

2. Badhwani, Ram. *Studies on solute solvent interactions of electrolytes in some polyhydroxy alcoholic solution.* Awadh. Dr. Vishnu, Department of Chemistry, Gorakhpur University, Gorakhpur.

3. Barua, Tapas Kumar. *Studies on lectin receptors.* Calcutta.

4. Bhattacharyya, Atanu. *Chemistry of 3-acyl-4oxo-4H-(I) benzopyrans.* Calcutta.

5. Bikram Singh. *Chemical investigation of some Indian medicinal plants.* Avadh. Dr. R.S. Thakur, Deputy Director, C.I.M A.R. Lucknow.

6. Datta, Asis Kumar. *Studies on the floral and faunal lipids of Sundarban mangrove ecosystems.* Calcutta.

7. Datta, Nabanita. *Studies on the chemical constituents of some indigenous plants of biological interest.* Calcutta.

8. Deshpande, Subodh Shrinivas. *Studies into trace level determination of elements by polarography and stripping voltammetry.* Nagpur. Dr. A P. Joshi, Department of Chemistry, Nagpur University, Nagpur.

9. Garg, Neelam. *Polarographic studies of some organic ligands and their metal complexes.* Rajasthan. Dr. C.M. Gupta and Dr. V.K. Sharma, Department of Chemistry, University of Rajasthan, Jaipur.

10. Gupta, Durga Shankar. *Studies on Lewis acid behaviour of organobimetallic tetrathiocyanate and Selenocyanate.* Avadh. Dr. P.P. Singh, Principal, Bareilly College, Bareilly.

11. Gupta, Prakash Chand. *Study of some complexation processes at dropping mercury electrode.* Rajasthan. Dr. C.M. Gupta, Krishna Kutir, 2 GA-24 Jawahar Nagar, Jaipur.

12. Harendra Singh. *Studies on soil, water and weather of Saryu Canal Pariyojana in Block Gilaule, District Bahraich.* Avadh. Dr. P.P. Singh, Principal, Bareilly College, Bareilly.

13. Juneja, P.L. *Investigations into material properties of green leaves.* Ghasidas. Dr. G.P. Chhalotra and Dr. A N. Gavai, Government Engineering College, Bilaspur.

14. Kalyani, G. *Anodic oxidation of metals like titanium, zirconium and niobium.* Osmania.

15. Khan, Zafruddin. *Hepatic endoplasmic reticulum and dietary protein : A biochemical study in rats.* Avadh. Dr. U.K. Mishra, Department of Biochemistry, V.P. Chest Institute, Delhi University, Delhi.

16. Lakshmi Narayanan, S. *Lead corrosion in batteries.* Osmania.

17. Mandwal, Ashok Kumar. *Chemical and antimicrobial studies on the antibiotic-X-1020.* Avadh. Dr. M.C. Bhatia, Asstt. Director, C.D.R I., Lucknow.

18. Marathey, Ushaprabha Madhav. *Fluorescence spectral studies of some pyromellitein dyes.* Shivaji. Dr. C.K. Bhaskare, Reader, Department of Chemistry, Shivaji University, Kolhapur.

19. Memariani, Mahmoud. *Chemical studies of transformation of steroids.* Osmania.

20. Mohanadas, C. *Some redox titrations using N-bromophthalimide and N-bromo saccharin G.* Kerala. Dr. P. Indra senan, Reader, Department of Chemistry, University of Kerala, Trivandrum,

21. Mohapatra, Biswamohan. *Chemical annealing of damage pragments in gamma irradiated pure and doped potassium nitrate.* Utkal.

22. Nath, Ranendu Kumar. *Physico-chemical investigation of the capsular polysaccharide of Klebsiella serotype-K-40.* Calcutta.

23. Patki, Geeta Kishor. *Spectrophotometric investigation of the reaction of certain chromogenic reagents in the presence of some surface active reagents.* Nagpur. Dr. S. P. Sangal, L.I.T., Nagpur.

24. Ramesh, D. *Synthesis of nucleo and extranucleo heterosteroids.* Osmania.

25. Rao, Jyoti. *Studies on potential psychotropic agents.* Avadh. Dr. A.K. Saxena, Scientist, Division of Medicinal Chemistry, C.D.R.I., Lucknow.

26. Samanta, Anushree. *Coordination chemistry : Studies on mixed ligand complexes of* UO_2 *(VI), Th (IV), and Co (II), Ni (II), Cu (II), Zn (II),* VO^2 *(IV) and Cd (II).* HS Gour. Prof. M.C. Saxena, Department of Chemistry, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

27. Samantaray, Rabindra Nath. *Nitrogen transformation in submerged soils in high rainfall areas and its relation to nitrogen management for growing rice on rainfed low lands.* Utkal.

28. Sharma, A.P. *Studies on estrogen antagonists : Synthesis of 2, 3-diarylchromans, chromenes, chromones and chromanones.* Avadh. Dr. S. Durani, Assoc. Prof., Department of Chemistry, IIT Bombay.

29. Singh, Rajkumar Hemakumar. *Reaction of transition metal ions with nitrile group in presence of alcohols.* Manipur. Dr. A.B. Manihar Singh, Department of Chemistry, Manipur. University, Imphal.

30. Sivaraj, Ch. *Characterization and evaluation of catalysis prepared by precipitation from homogeneous solution.* Osmania.

31. Srivastava, Beena. *Spectral and physico-chemical studies of Schiff base complexes of organomercury compounds.* Avadh. Dr. P.P. Singh, Principal, Bareilly College, Bareilly.

32. Srivastava, Rashmi. *Chemical studies of biologically active plants.* Avadh. Dr. D. K. Kulshresth, Assistant Director, C.D.R.I., Lucknow.

33. Sudhakar Rao, V. *Synthesis of Bis, Benzopyrano, Furoquinolones and their anticoagulant activity.* Osmania.

34. Venkata Krishna Rao, Potluri. *Some new analytical aspects of Cacotheline as Redox indicator.* Andhra.

35. Venkateshwar Rao, K. *Synthesis of hetero steroids.* Osmania.

36. Verma, Lata. *Non-isothermal studies on thermal decomposition of some inorganic complexes.* Magadh.

37. Verma, Upendra Nath. *Kinetic parameters of some complexes of metals with nitrogen-sulphur containing ligands.* Magadh.

38. Vishnudhari. *Studies on solution properties of biomolecules in electrolytic solution.* Avadh. Dr. Vishnu, Department of Chemistry, Gorakhpur University, Gorakhpur.

Earth Sciences

1. Jayappa, K.S. *A study of beach morphology and near shore geomorphology of the Mangalore Area.* Mangalore. Dr. K.R. Subramanya, Reader and Head, Department of Marin Geology, Mangalore University, Mangalagangotri.

2. Niranjan Kumar, K. *Hydrogeological studies in Gajwel Taluk, Medak District, with reference to rural development.* Osmania.

3. Prabhakar, P. *Primary and secondary geochemical dispersion patterns around Gani-Kalve Copper Deposit, Kurnool District, A.P.* Osmania.

4. Raghavendra Rao, Makanboyina. *Some crop weather studies in Vizianagaram, Tirupati and Hyderabad in the pearl millet growing tracts of Andhra Pradesh.* Andhra.

5. Sesha Mani, Madhunapantula. *Some biometeorological studies of Andhra Pradesh.* Andhra.

6. Subrahmanya Sarma, Konduri Gurnadha. *Nearshore dynamics along Visakhapatnam Coast.* Andhra.

Engineering & Technology

1. Asanare, Keshav Laxman. *Some studies in synchronous machine control.* Nagpur. Dr. Y.G. Paithankar, Department of Electrical Engineering, Nagpur.

2. Manjunath, D. L. *Treatment of sugar industry wastes using Upflow Anaerbic Sludge Blanket (UASB) process.* Roorkee.

3. Murugesan, T. *Studies in Gas liquid agitated vessels.* Anna.

4. Pal, Roshan. *Analysis of connecting rod big-end bearing of an internal combustion engine.* Roorkee.

5. Rathnamaiah. K Subba. *Investigation of parameters affecting mould and casting characteristics in Vacuum moulding process using AL-4% Cu alloy.* Roorkee.

6. Valsarajan, K.V. *Some numerical studies on the large deflection of clamped skew sandwich plates and applicability of Saint Venant's principle in sandwich elements.* Kerala. Dr. N. Ramachandra Rao, Prof., Department of Civil Engineering, College of Engineering, Trivandrum.

P.S.M. DEGREE COLLEGE

KANNAUJ

Wanted a lecturer in education in the scale Rs. 2200-4000 on ad-hoc basis till 27.1.1989 (Likely to continue) or till an appointee of U.P. Higher Education Service Commission joins.

The application should reach the college office latest by 07.8.88 and attend interview on 14th Aug., '88 in the college at 01 P.M. The prescribed application form alongwith prescribed qualification is available in the college office on payment of Rs. 21.00.

Dr. P. N. Tandon
SECRETARY

CLASSIFIED ADVERTISEMENTS

UNIVERSITY OF KERALA
UNIVERSITY BUILDINGS
TRIVANDRUM

No. PR. I201/25/88. **Dated : 15th July, 1988**

NOTIFICATION

Applications are invited from qualified candidates for appointment to the following posts in the University :

Sl. No.	Name of Post	Department	No. of Posts	Scale of Pay	Remarks
1.	Professor	Politics	1	Rs. 2450-3600	Open Merit Quota
2.	Professor	Education	1	-do-	do.
3.	Professor	Sanskrit	1	-do-	Reserved for Ezhava Community
4.	Reader	Aquatic Biology and Fisheries	1	Rs. 1950-2950	Non-Plan Open Merit Quota
5.	Reader	Phycs	1	-do-	Reserved for Muslim Community
6.	Reader	Botany	1	-do-	Reserved for Ezhava Community
7.	Reader	Mathematics	1	-do-	Open Merit Quota
8.	Reader	Politics	1	-do-	do.
9.	Reader	Education	1	-do-	do.
10.	Reader	English	1	-do-	Reserved for SC/ST
11.	Lecturer	Aquatic Biology and Fisheries	2	Rs. 1300-2725	Non-Plan One post reserved for OBC; one in Open Merit
12.	Lecturer	Botany	1	-do-	Reserved for SC
13.	Lecturer	History	1	-do-	do.
14.	Lecturer	German	1	-do-	Reserved for Ezhava Community

Note : (1) Those who have requisite qualifications in Aquatic Biology, Zoology or Marine Biology may apply for the posts in Department of Aquatic Biology & Fisheries.

(2) In the absence of suitable candidates from the reserved community, applications from other reserved communities will be considered in accordance with the rules relating to communal rotation. In the absence of suitable candidates from any of the reserved communities, applications from forward community candidates will also be considered.

Requests for application form and further details regarding qualifications, age etc., accompanied by SBT challan receipt for Rs. 2/- (Rupees two only) remitted under K.U.F. Account, or crossed Postal Order for value of Rs. 2/- payable to the Finance Officer, University of Kerala, Trivandrum (in the case of candidates residing outside Kerala State only), should be addressed to the Deputy Registrar (Administration), University of Kerala, Trivandrum 695 034.

The last date for receipt of completed applications is **20th August, 1988.**

REGISTRAR

ZAKIR HUSAIN POST-GRADUATE EVENING COLLEGE

AJMERI GATE, DELHI - 110006

Applications are invited for the following posts :

1. Lecturer in History -1-Permanent
2. Lecturer in Philosophy -1-Leave Vacancy
3. Lecturer in English -1-Leave Vacancy

All posts carry Grade & allowances admissible under the University rules.

Qualifications

(a) Doctorate Degree or Research Work of equally high standard. (b) Good academic record with atleast second class (C in seven point scale) Master's Degree in subject concerned. Having regard to the need for developing inter-disciplinary programmes. Degree in (a) and (b) above may be in relevant subject. Provided that if the Selection Committee is of the view that research work of a candidates as evident either from his/her thesis or from published work is not considered suitable, a person possessing good academic record (weightage being given to M. Phil/equivalent degree/research work of quality) may be appointed provided he/she has done research work for atleast two years or has practical experience in a research lab/organisation on the condition that he/she will have to obtain Doctor's Degree or give evidence of research of high standard within ten years of appointment failing which he/she will not be able to earn future increments until the aforesaid requirements are fulfilled.

Application Forms available with the Office between 4 and 7 p.m. Those asking for the forms by post should send a self-addressed stamped envelope of 11"x5" size.

Those called for interview from outstations be paid single-one-way Railway fare on production of cancelled tickets.

Applications should reach the College Office within **15 days** of the appearance of this advertisement.

SAHA INSTITUTE OF NUCLEAR PHYSICS

SECTOR-1, BLOCK 'AF',
BIDHANNAGAR
CALCUTTA-700 064

Advt. No. SINP/R/2.88

Admission Notice (1988-89)

for Associateship Course in Radiological Physics

Applications are invited for admission to one-year Post M. Sc. Associateship Course in Radiological Physics leading to the Associateship Diploma of the Saha Institute of Nuclear Physics, Calcutta. Candidates should have an M.Sc. or equivalent degree in Physics or in Chemistry with specialization in Physical Chemistry from a recognized University.

Candidates appearing in the M. Sc. final examination in the subjects as mentioned above may also apply for admission.

Admission will be on the basis of academic records upto M. Sc. and of performance in an interview.

Candidates appearing for the interview will be reimbursed second class Railway fare for to-and-fro journey from their normal place of residence in India to Howrah/Sealdah Railway Station and back by the shortest route on production of Railway Receipts/Tickets and will also be paid D.A. for one day only as per rules of the Institute. Each student will be paid a scholarship of Rs. 1800.00 per month for the duration of the course. Hostel accommodation will be available for male students only. The session is likely to commence from September, 1988.

Applications in triplicate giving the full details of academic records should reach the undersigned by **August 8, 1988**.

D.N. Bhattacharjee
REGISTRAR

GURU NANAK DEV UNIVERSITY

AMRITSAR

CORRIGENDUM

The grades mentioned against serial Nos. 5, 15 and 37 (i.e. Rs. 1500-2500, Rs. 1200-1900 and Rs. 700-1600) in Advertisement No. 4/88 of the Guru Nanak Dev University may be treated as deleted and the same have been revised on the U.G.C. pattern (i.e. Rs. 4500-7500, Rs. 3700-5700 and Rs. 2200-4000 respectively).

REGISTRAR

ANNA UNIVERSITY
MADRAS 600 025

Advertisement No. 782/L3/88-2

Applications in the prescribed form are invited for the following posts in this University. Application form, details of prescribed qualifications and other particulars can be had from the Registrar, Anna University, Madras 600 025 on application, accompanied by a crossed Indian Postal Order for Rs. 10/- (Rupees Ten only) dated not earlier than 20.7.88 drawn in favour of the Registrar, together with a stamped self-addressed envelope (Rs. 2.00) of size 22 x 10 cm.

DETAILS OF POSTS

Division of Mining Engineering

Assistant Professor — (1)

(Scale of Pay : Rs. 1200-50-1300-60-1900**)**

Lecturer — (1)

(Scale of Pay : Rs. 700-40-1100-50-1600)

In addition, D.A., H.R.A. and C.C.A. are admissible at the rates in force from time to time.

Request for application forms, details of qualifications/field of specialisation prescribed and other particulars will be entertained upto **8.8.88.**

Last date for receipt of completed application is **12.8.88.**

Note : The candidates will be eligible for UGC/AICTE Scale when the revision is made.

REGISTRAR

TATA INSTITUTE OF SOCIAL SCIENCES

DEONAR

BOMBAY 400 088

Dated : 19.7.1988

Applications are invited for the following posts. The prescribed application form, along with the details of qualifications, experience, etc., prescribed for the posts, should be obtained either in person or by post, by sending an application for the same to the above address along with a stamped (Rs. 2.00) self-addressed envelope superscribed "Request for Application Form for Teaching Posts".

I. Professor : (One post) in the Research Unit for Research and Consultancy in Social Policy and Social Welfare Administration, in the pay-scale of Rs. 4500-7300+D.A. and other allowances. Substantive areas : **Social Work (with special interest in Social Welfare Administration or Rural Development), Sociology or Political Science.**

II. Reader : (Four posts) in the pay scale of Rs. 3700-125-4700-150-5300+D.A. and other allowances. **One post in the Department of Social Welfare Administration,** having M.A. degree (with 55% marks) in Social Work with either a specialisation in Social Welfare Administration or in a generic programme with field work or work experience in teaching administration or as an administrator or M.A. degree in Rural Management, and five years' administrative experience in Social Welfare/Development Administration; **One post in the Department of Research Methodology** having M.A. degree (with 55% marks) in Social Work, Social Sciences, or Philosophy and a Ph. D. Degree- **One post in the Research Unit for Research and Consultancy in Social Policy and Social Welfare Administration having M.A. degree** (with 55% marks) in Social Work, with either a specialisation in Rural Development or a generic programme with field work or work/research experience in Rural Development; Political Science or Public Administration (with Development Administration); **One post in the Research Unit for Sociology of Education,** having M.A. degree (with 55% marks) in **Sociology or Economics or Social Work.**

III. Lecturer (Six posts) in the pay scale of Rs. 2200-75-2800-100-4000+D.A. and other allowances. **Tow posts in the Unit for Rural Studies,** (1) having M.A. degree (with 55% marks) in Economics, Statistics/Econometrics, or Demography and (2) having M.A. degree in Social Work Anthropology, or Rural Development. The Second post is reserved for ST candidates; **One post in the Department of Urban and Rural Community Development,** having M.A. degree (with 55% marks) in Social Work with either specialisation in URCD or in a generic programme with field work or work experience in this field. **The post is reserved for ST candidates only;** One post in the Research Unit for Social Policy and Social Welfare Administration, having M.A. degree (with 55% marks) in Social Work with either a specialisation in Social Welfare Administration or in a generic programme with field work or work/research experience in Rural Development; Economics (Welfare Economics and Agricultural and Rural Economics) or Anthropology. **The post is reserved for SC candidates; One post in the Research Unit for Child and Youth Research** having M.A. degree (with 55% marks) in Economics or Psychology and preferably with research related to Children and Youth. **The post is reserved for SC candidates; One post in the Research Unit for Urban Studies,** having M.A. degree (with 55% marks) in Economics, Human Geography or Public Administration. **The post is reserved for SC candidates only.**

IV. **Assistant Librarian** (One post) in the pay scale of Rs. 700-40-1100-50-1600 (unrevised)+D.A. and other allowances, having at least (a) a high Second Class Master's degree in a subject other than Library Science and Second Class in Bachelor's degree; (b) Master's degree in Library Science with first class or high second class.

V. **System Incharge** (One post in the pay-scale of Rs. 1100-50-1600 (unrevised), having Master's level degree (with 55% of marks) in Social Sciences/Mathematics/Statistics/Business Administration with about 5 years experience in handling Social Science research data analysis.

VI. **Programmer** (One post) in the pay-scale of Rs. 700-40-1100-50-1600 (unrevised) having Master's level degree (with 55% marks) in Social Sciences/Mathematics/Statistics/Business Administration with 2 years' experience in programming for Social Sciences research data analysis/Library documentation.

The last date for receipt of filled in application is **22.08.1988.**

N. Krishnamoorthy
REGISTRAR

BANASTHALI VIDYAPITH

The Vidyapith invites applications for the post of LIBRARIAN :

Qualifications : (a) I/II M.Lib.-Sc. or M.A./M.Sc./M.Com. with I/II B.Lib.Sc. or Diploma Lib.Sc.

(b) Minimum 10 years experience in responsible professional capacity in a University Library.

(c) Ph.D./Equivalent research work in the relevant field.

Grade : 4500-150-5700-200-7300.

Dearness Allowance, Contributory Provident Fund, Gratuity-cum-Insurance as per Vidyapith rules. Residential accommodation at subsidized rates.

Workers must become habitual wearer of KHADI on appointment.

Note : Persons who applied in response to advertisement No. 4/88 need not apply again.

Bio-Data on plain paper may be sent to the Secretary, Banasthali Vidyapith, P.O. Banasthali Vidyapith, Rajasthan 304022 within 15 days of the publication. No. 8/88.

INDIAN COUNCIL OF MEDICAL RESEARCH

Applications are invited upto **15th September, 1988** for the post of **Director** at Council's Regional Medical Research Centre, Jabalpur.

This Centre is engaged to improve the health status of the tribal population in the region, specially in Madhya Pradesh. The Centre carries out various studies using multi-disciplinary approach to find suitable solutions to health problems. The research emphasis is on utilizing various approaches for improving the health care delivery system such as epidemiological and operational research, control of vector-bome diseases, improving of the health of the mother and children as well as utilizing inter-sectoral approach for strengthening health programmes, genetic and entomological aspects of health and diseases and other common infectious diseases. The Centre is also engaged in doing socio-cultural and anthropological types of studies. The major research emphasis proposed for this Centre during VIII Five Year Plan will be on (i) Control of Vector Bome Diseases, specially Malaria and (ii) various aspects of Genetic Disorders. The Centre is well equipped with Genetic, Entomological and Microbiological laboratories at present, including Computer facilities.

Qualifications & Experience : Essential : MBBS with doctorate degree in Medical Sciences, e.g. Community Medicine/Paediatrics/Microbiology/Pathology or any clinical or laboratory allied subjects with research experience of 15 years with original work as evidenced by publications.

Desirable : Administrative experience in responsible position.

Job Requirements : The Director is expected to formulate and conduct research programmes requiring multidisciplinary approach for finding solutions to health problems with special reference to tribal population and regional specific

Salary/Conditions of Service : The scale of pay attached to the post is Rs. 5900-200-6700 plus allowances as per Central Govt. Rules and N.P.A. of Rs. 900/- p.m. for medical graduates only. Higher initial pay can also be considered. Medical aid and leave travel concession are also permissible for the employee and his family as per Govt. rules.

Age : Below 50 years. SC/ST candidates allowed relaxation in accordance with Govt. of India Rules.

Benefits of pension admissible. Private practice is not allowed. However, non-practising allowance is admissible to medical graduates only as per rules of the Council.

Application forms can be obtained from the office of the Director General, Indian Council of Medical Research, Post Box No. 4508, Ansari Nagar, New Delhi-110 029. Applications complete in all respect should be sent to the Director General, Indian Council of Medical Research, Ansari Nagar, Post Box No. 4508, New Delhi-110 029. Applications should be accompanied with crossed postal order for Rs. 8/- (No fee for SC/ST candidates) made out in the name of Indian Council of Medical Research, New Delhi. Applications without postal order will not be entertained.

Candidates called for personal discussion will be paid 1st class rail fare by the shortest route. No TA/DA is admissible for joining the post or on termination of appointment. Application from the employees working under the Central/State Govt./Semi Govt. and Govt. controlled undertakings should be sent through the employers and be received before the closing date alongwith the certificate that the applicant will be relieved within three moaths of receipt of appointment orders. Advance copies will be considered subject to the proviso that no objection certificate will be produced at the time of personal discussion. Applications received after the closing date will not be considered.

Incomplete applications will not be entertained.

S.V.E. Society's
RURAL ENGINEERING COLLEGE
BHALKI-585328
DIST. BIDAR (KARNATAKA)

Application on plain paper giving detailed bio-data are invited for Teaching Assisantss/Local Candidates/Lecturers/Assistant Professors and Professors, in the Departments of :

A. Under-Graduate

Civil, Mechanical, Electrical, Electronics & Communication, Computer Science, Industrial & Production, Applied Mathematics, Computer Oriented Mathematics, Physics, Chemistry, Architecture and Town Planning, Engineering Economics and Accountancy.

B. Post-Graduate

Irrigation Engineering & Geotechnical Engineering, under Civil Engineering Department.

The qualifications and Pay Scales are as follows :

1. Teaching Assistants/Local Candidates :

Qualifications : Ist Class B.E. in case of Engineering graduate.

1st Class M. Sc. in case of applied Sciences.

Pay Scales : Rs. 1890/- Consolidated.

2. Lecturers (Category 'A')

Qualifications : 1st Class B.E. with distinction in Engineering with one year teaching experience.

1st Class M.Sc. with distinction in Applied Sciences with one year teaching experience.

Pay Scales : Rs. 1900-50-2300-75-2900-90-3350-100-3650.

Total emoluments at the minimum of the scale is Rs. 2082/- & at the maximum of the scale is Rs. 3930/- approximately.

3. Lecturers (Category 'B')

Qualifications : 1st Class M.E. in case of Engineering and Ph. D. in case of Applied Sciences.

Pay Scales : Rs. 700-40-1100-50-1600/ with a minimum starting basic of Rs. 860/-

Total emoluments at the minimum of the basic Rs. 2443/- & at the maximum of the basic Rs. 3747/- approximately.

4. Asstt. Professors

Qualifications : 1st Class M.E. with five years experience or Ph. D. with 3 years experience in case of Engineering Graduates and Ph. D. with five years experience in case of applied science candidates.

Pay Scale : Rs. 1200-50-1300-60-1900.

Total emoluments at the minimum of the basic Rs. 3082/- and at the maximum of the basic Rs. 4298/- approximately.

5. Professors

Qualifications : 1st Class M.E. with 7 years experience/Ph. D. with five years experience in case of Engineering graduates and Ph.D. with 7 years experience in case of applied sciences department.

Pay Scale : Rs. 1500-60-1800-100-2000-125/2-2500.

Total emoluments at the minimum of the basic Rs. 3582/- and at the maximum of the basic is Rs. 5408/- approximately.

Membership of the Professional bodies, experience in laboratory planning and experimental development, published work of high repute in National and International journals will be an additional asset. The qualifications can be reasonably relaxed in case of well experienced persons. In case of exceptionally well qualified & experienced candidates, salary can be negotiated.

The completed applications should reach the undersigned within fifteen days of the publishing of this advertisement alongwith a crossed Indian Postal Order/D.D. for Rs. 10/- drawn in favour of Principal, Rural Engineering College, Bhalki. The Candidates should take no objection from their employees at their end as they will have to join the new post in case of selection reasonably at the earliest.

Bhimanna Khandre
M.L.C.
CHAIRMAN

Dr. S.M. Goel
PRINCIPAL

MAULANA AZAD COLLEGE OF TECHNOLOGY
(A REGIONAL ENGINEERING COLLEGE)
BHOPAL (M.P.)

Advertisement No : Estt/R/2/7/88

Applications are invited for the following posts in the prescribed forms.

A. Professor Architecture and Chemistry

Scale of Pay : Rs. 1500-60-1800-100-2000-125/2-2500 (to be revised)

Age : Not below 35 years

A (i) Essential qualifications—Architecture

An eminent scholar with published work of high quality, actively engaged in research. Ten years of experience in teaching/research/professional work. Experience of guiding research.

OR

An outstanding architect with established reputation who has made significant contribution to knowledge.

A (ii) Essential qualifications—Chemistry

An eminent scholar with published work of high quality, actively engaged in research. Ten years experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Specialisation : In any branch of Chemistry.

B. Asstt. Professor—Civil, Mechanical & Mathematics

Scale of Pay : Rs. 1200-50-1300-60-1900 (to be revised)

Age : Not below 30 years

B (i) Essential qualifications for Civil & Mechanical Engg.

Good academic record with a Doctor's degree in relevant field. About five years experience of teaching and/or research and development.

Candidates not possessing Ph. D. may be considered, if they have to their credit equivalent research published work or design/development work of a high order either in the institution or in an industry.

OR

In case of persons to be recruited from industry or professional fields, candidate should possess good academic record with recognised professional work of about seven years which should include innovation and/or research and development.

Specialisation

For Civil Engineering : Hydraulics and Fluid Mechanics/Building Science & Technology/Structural Engineering/Applied Geology/Transportation Engineering/Surveying.

For Mechanical Engineering : Machine Design/Vibration/Tribology/Head Power/Production/Industrial Engineering/Fracture Mechanics/Operation Research.

B (ii) Essential qualifications for Mathematics

Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials. About five years experience of teaching and/or research provided that atleast three of these years were as Lecturer or in a equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Specialisation

Elasticity including thermo elasticity or Numerical analysis and statistics Or Special functions and Computer Programming, Fourier series, Hydrodynamics and Magneto Hydrodynamics.

C. Lecturer Mathematics

Scale of Pay : Rs. 700-40-1100-50-1600 (to be revised)

Age : Not below 22 years

Essential qualifications

(i) A doctorate degree or research work of an equally high standard; and

(ii) Good academic record with atleast second Class (C in the seven point scale) Master's degree in a relevant subject from an Indian University or an equivalent degree from foreign University.

Having regard to the need for developing inter disciplinary programmes, the degree in (i) and (ii) above may be in Mathematics.

Provided that if the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (ii) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a good academic record (weightage being given to M. Phil/or equivalent degree or research work of quality) may be appointed provided he has done research work, for atleast two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research of high standard within eight years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Desirable : Knowledge of Numerical Analysis, Computer Programming, and Operational research.

General Instructions

1. Age relaxable in case of exceptionally outstanding candidates.
2. (a) Candidates serving in the Government Semi-Govt., Autonomous organisations should apply through proper channel or they should produce 'No Objection Certificate' from the employer at the time of interview, if called.

   (b) Those who had applied on prescribed application form and through proper channel in response to advertisement No : Estt/R/1/June/86 (For the posts of Prof. Chemistry/Asstt. Prof. Mathematics/Lecturer Mathematics) may send their applications on plain paper mentioning further achievements, if any.
3. Higher initial pay may be considered in deserving cases.
4. The benefit of CPF-cum-Gratuity is admissible according to College rules.
5. The Scheme for CPF-cum-Pension-cum-Gratuity is likely to be implemented.
6. Adequate number of seats are reserved for SC/ST candidates. Other things being equal, preference will be given to candidates belonging to SC/ST.
7. Application form can be had from the Registrar, Maulana Azad College of Technology, Bhopal-462 007 on requisition accompanied by self addressed and Rs. 2.20 paise stamped envelope 25x10 cm size giving on the top of the cover name of the post and advertisement number Estt/R/2/July, 1988.
8. Completed applications should reach the Registrar at the above address on or before **16th August, 1988.** Incomplete/late applications and those without registration fee of Rs. 7.50 in the form of Crossed Indian Postal Order may not be considered.

Further details will be made available in the instructions sheet attached with the prescribed application form.

REGISTRAR

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University News

24

MONDAY, AUGUST 8, 1988 Rs. 1.50

Networking of University Libraries

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Decision Making

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Nursing Education

●

Monitoring and Implementation of National Policy on Education

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Inter-University Centres

●

Open Universities Network

MINISTRY OF HEALTH AND FAMILY WELFARE

D.G.H.S. SCHOLARSHIP SCHEME (1988-89)

Applications are invited under the D.G.H.S. Scholarship Scheme of the Government of India, from students of Indian Nationality who are pursuing their POST-MBBS/B.D.S./M.Sc. (Ph.D.) Courses in case of non-medical students in human sciences. Only those students, who have already secured admission and got themselves registered with the University concerned in the following subjects, are eligible to apply for the award of Scholarship under the scheme :

POST-MBBS/B.D.S./M.Sc. (i.e. Ph.D. Courses in case of non-medical)

Anaesthesiology
Dermatology and Venerology
Hameatology/Blood Banking
Radiology
T.B. & Respiratory Diseases
(D.T.C.D. and M.D.)
Dental subject M.D.S.
Preventive and Social Medicine
Public Health
Hospital Administration, including
Medical Records
Psychiatry
Pathology

Community Health
*Anatomy
*Bio-Chemistry, Bio-Physics
*Criminology & Forensic
Medicine
*Pharmacology
*Physiology
*Microbiology/Bacteriology
(*In these students non-medical (Ph.D. Students
also will be considered)

POST DOCTORAL COURSES : Endocrinology, Paediatric Surgery, Genetic Surgery

Non-Medical students of all the Institutions including the Central Institutions and Medical students of only those Institutions where Residency Scheme has not been introduced would be eligible for the award of scholarship under the scheme. Students getting scholarship under any other scheme or drawing pay, will not be eligible for the scholarship money under this scheme.

The amount of Scholarship is Rs. 850/- p.m. for POST-MBBS/BDS/M.Sc. (i.e. Ph.D. Courses in case of non-medical students) and Rs. 1000/- p.m. for post-doctoral courses. The Scholarship money is payable from 1-4-1988 or from the date of joining the course, whichever is later.

Out of the total scholarships awarded under the scheme 15% are reserved for Scheduled Caste and 5% for Scheduled Tribes. In case suitable candidates of these categories are not available the scholarship will be treated as dereserved and allotted to other suitable candidates.

Application Forms for the scholarship under the scheme may be obtained direct from the Directorate General of Health Services, MEDICAL (F&S) Section, Room No. 649, A Wing, Nirman Bhavan, New Delhi-11 upto 6-9-1988. Application duly completed in all respects should reach the Directorate General of Health Services, MEDICAL (F&S) SECTION on or before **7-10-1988**. No request for application form will be entertained after 6-9-1988, and the application received after the last date is over (i.e. **7-10-88**) will not be considered.

Selected candidates will be required to execute a bond as prescribed by the Government of India, Ministry of Health & Family Welfare. The Scholarship money will be available only for the duration of the course but in any case it will not be for more than two years. The Scholarship will not be paid for the duration of the House-Job, if any but will be paid from the actual date of joining the Post-Graduate degree/diploma Courses.

Selection of candidates for the award of scholarship will be made by the Central Selection Committee appointed by the Government of India and its decision will be final and no correspondence will be entertained in this regard.

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C.F.T.R.I., M

UNIVERSITY NEWS

VOL. XXVI AUGUST 8
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Editor :
SUTINDER SINGH

UGC and the Networking of University Libraries

Ishrat Ali Qureshi*

The development of university libraries in India owes much to the efforts of the University Grants Commission (UGC). During the colonial rule their development attracted little attention and they were considered as conventional but more or less useless accessories. The importance attached to them may be gauged from the fact that in the case of the premier universities of the country—Bombay, Calcutta, Madras and Allahabad—the libraries could come into existence after as long a period as ranging from 17 to 29 years from the establishment of these Universities. The Indian Universities Commission (1902) was very critical of the pathetic state of affairs in the university libraries of the country.

Role of the UGC

Right from its inception in 1951 the UGC has been fully alive to the need of improving library facilities in universities. Within a few years of its establishment, it appointed a Library Committee (1957) under the Chairmanship of S.R. Ranganathan to review the working of university libraries and to make recommendations about their development. The recommendations of the Committee, covering almost all aspects of the working and planned growth of academic libraries, were accepted by the Commission as guidelines for its future programme of action. The framework of the Commission's planning envisaged the development of all the three important components of the library—building, books and staff.

Till 1950s the biggest problem of Indian university libraries was that of accommodation. Many of the universities did not have a separate library building and those which had one, were complaining of an acute shortage of space. The Commission, therefore, took up this problem on a priority basis and provided funds to the tune of about Rs. 2.87 crores to 65 universities in the first three plans for the construction of new library buildings or for the expansion of the existing ones. However, the improper planning of buildings, without taking into account the future growth rate and the services expected of a university library, has again posed a serious problem of space for the libraries of many of the universities. The ratio of seats to students varies from 1 : 12 at Jadavpur to 1 : 70 at Lucknow. The UGC Library Committee (1957) had recommended a ratio of 1 : 5. The UGC itself reported as far back as 1968 that "the library buildings put up with the Commission's assistance are, however, proving to be inadequate to meet the needs of the growing student population in the country and the special requirements of the postgraduate and research students."

With a view to improving the quality of teaching and research in universities, the UGC gave highest priority to the development of library collections from the very beginning. During the first three plan periods and in 1966-67 and 1967-68 the Commission made available funds totall-

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Deputy Librarian, Maulana Azad Library, Aligarh Muslim University, Aligarh-202 001.

ing Rs. 4.12 crores to university libraries for the purchase of books and periodicals. From 1969-70 to 1983-84 the Commission's financial assistance for the purpose worked out to Rs. 16.17 crores. As a result of these liberal grants the number of university libraries with a collection of upto one lakh volumes increased from 5 in 1961-62 to 64 in 1983-84, that between one to five lakh volumes from 27 to 67 and that above five lakh volumes rose from 5 to 9 during the same period.

The UGC also paid due attention to improve the quality of library personnel in universities. In accordance with the recommendations of the UGC Library Committee, the Commission accorded academic status to the Senior library staff (Librarian, Deputy Librarian and Asstt. Librarian) and placed them in the corresponding scales of pay of the three segments of the teaching staff (Professor, Reader and Lecturer) from January, 1961. The parity between the salary scales of the teaching staff and the library staff, which continued undisturbed till 1972 was, however, eroded from January, 1973 when fresh revision of scales of pay by the UGC was made applicable only to the university teachers and not to the librarians. It took quite a few years for this wrong to be corrected. The parity was restored by the Commission only from April, 1980. The Commission also approved the application of the Merit Promotion Scheme to the library staff from January, 1983. While extending the privileges and material benefits of the teaching community to library personnel, the Commission now insists that they should also possess qualifications comparable to those of university Professors, Readers and Lecturers.

Haphazard Growth

Despite commendable efforts by the UGC to improve library facilities in universities, the development of university libraries in the country has not followed a uniform pattern. This accounts for wide variations in their policies, organisational and administrative structures, collections, services, standards, manpower resources, physical facilities, etc. The current scenario of university libraries presents a picture of haphazard growth.

The reasons for this unhappy state of affairs are : First, the post-Independence era is characterised by a great upsurge in the field of higher education. The period from 1948 to 1970 witnessed a deluge of new universities and colleges. While there were only 20 Universities in the country on the eve of Independence, the number rose to 29 by 1950, 47 by 1960 and 85 by 1970. At present there are over 170 universities and university level institutions. With the proliferation of universities the libraries also came into existence, but in most cases without the provision of basic infrastructure. Further, while the library was established its growth seldom received the attention it really deserved. The result is that in a large number of cases the development of the library has not kept pace with the expansion of the institution.

Second, in the absence of a national policy framework the development of university libraries continued and still continues to be asymmetrical and awry. The UGC Library Committee (1957) was an adhoc body and hence it wound up after submitting its report. No efforts were made thereafter to create a high level policy making body to advise the UGC on a continuing basis about future development of university libraries. The Commission on its own also did not initiate any action to coordinate the policies, functioning, services and acquisition programmes of these libraries.

Third, no recognised norms have been followed in financing the university libraries. The University Education Commission (1948-49) had recommended that about 6.25% of the university budget would be a reasonable expenditure on libraries. The Education Commission (1964-66) suggested that this could vary from 6.5% to 10%. This standard has been beyond the reach of almost all the University libraries in the country. In its report on "Development of Library facilities in Universities and Colleges" (1968) the Commission admitted that it was not in a position to provide funds at this rate. The result is that although the total expenditure on books and periodicals has increased substantially, the percentage of library expenditure to the total institutional budget is showing a declining trend. Coming down from 4.04% in 1960-61, it now ranges between 2 to 4% in an overwhelming majority of cases. Owing to escalating personnel budget and rising maintenance and administrative costs under inflationary pressures of the economy, the percentage of expenditure on books and periodicals to the total budget of the library is also going down steadily. Further, the unabated hike in the cost of reading material squeezes the book budget and reduces its real purchasing power compelling many university libraries to reduce their annual intake of books and prune the subscribed lists of periodicals.

Fourth, the indifference, rather apathy, of the professional librarians to the application of the principles of scientific management to library administration has also contributed to the present morass of university libraries in India. A modern university library is a huge and complex organisation. Its growing complexities and problems call for the application of modern scientific principles of management. A study of its various operations and processes by management experts and the use of new management techniques can bring about a lot of improvement in its functioning and at the same time reduce operational costs. A recourse to the latest techniques and methods of scientific management by the Indian University libraries can avoid the present enormous waste of their resources in men and material, improve their functioning and ease, to some extent at least, the financial difficulties they are confronted with currently.

Network of University Libraries

Owing to the above factors the University libraries in India are under a great pressure today. Their predicament is that while they are erratically planned, under-developed and traditionally managed, they are faced with serious challenges of an unprecedented nature and magnitude at the turn of the century. The explosion of knowledge in the present age, the emergence of new disciplines at a very rapid pace, the exponential volume of published output, the fast growing magnitude of literature in non-traditional microforms, the tremendous increase in university enrolment, the substantial rise in the number of faculty members, the ever-increasing number of new departments of studies, the institution of new courses and the expansion of existing ones year after year, the intensification of research activity, the inter-disciplinary character of present day research, the diverse needs of undergraduates, postgraduates and researchers, the unabated steep rise in the prices of books and periodicals, the continued spiral in the cost of other inputs—have all created problems of an alarming nature for university libraries and generated new demands for library services. These formidable problems cannot be tackled effectively by and, to be more precise, are beyond the resources of individual libraries. The situation calls for concentrated joint action by all the university libraries, rather by all the libraries of the country—National, public, special, etc.

In the context of the present scenario of Indian university libraries it is gratifying to learn that the UGC is giving serious thought to the creation of a network of these libraries. The Commission has recently appointed a Committee on National Network System for University Libraries (NNSUL) under the Chairmanship of its Chairman to suggest a mechanism by which the library facilities in different universities/institutions could be shared and utilised at an optimal level. The above Committee at its meeting held on 22.4.88 has constituted a working group to prepare a detailed project report on NNSUL. The Working Group has been asked "to identify the present bottlenecks in the library system and to suggest an effective mechanism by which a networking system could be evolved taking into account the physical infrastructure and manpower presently available in university libraries".

Bottlenecks & Suggestions

The approach of the Commission to identify first the present bottlenecks in the library system before evolving a network of university libraries is a right one. It is vitally important that the causes of lopsided and morbid growth should be properly diagnosed first; only then the cure can be suggested and worked for. The maladies that have afflicted the university libraries are under-development, on the one hand, and malfunctioning, on the other. At present there is a lot of waste of material and personnel resources which needs to be avoided in order to improve their working. For planned growth to be result oriented and for additional investment to be adequately rewarding, it is imperative that not only the errors ill-conceived planning be corrected, but the causes of malfunctioning be also removed.

The problems confronting the university libraries today, which have originated both from faulty planning and administrative malfunctioning, have already been outlined above. In this connection the following suggestions are offered for the consideration of the UGC.

1. Formulation of a national policy for the planned and systematic growth of university libraries in the country, consistent with the National Policy of Education (1986) and the Programme of Action, as approved by the Parliament in August, 1986, is a matter of highest priority. In framing the said policy three agencies will be involved : (i) Ministry of Human Resource Development, (ii) the Planning Commission, and (iii) the University Grants Commission. It is, therefore, suggested that the UGC appoint a committee consisting of representatives from the said three

agencies and two or three senior University Librarians. The terms of reference of the proposed committee may, inter alia, include a review of the development of Indian university libraries from the 1960s onwards, enunciation of a national policy about their objectives, functioning and planned growth, a thorough examination of the administrative and financial problems confronting them, inter-library lending and resource sharing, cooperative cataloguing, automation of library operations, application of modern management techniques, etc. It can reasonably be expected that the recommendations of such a committee will go a long way in improving the working of Indian university libraries and in ensuring their proper future development conducive to the needs of higher education in the country.

2. The root cause of under-development of Indian university libraries is that their budgets do not conform to any recognised standard. The UGC should urge upon the universities the need of spending a minimum of 6% of their total budget on library facilities as recommended by the University Education Commission (1964-66). In the case of newly established universities the percentage may vary from 6 to 10% depending on the level of development of each university library.

3. The Commission and the State Governments should decide from time to time the proportion in which they would share financial assistance to State university libraries for their development.

4. In the case of the library of a new university, adequate infrastructure in the form of building, equipment, furniture, etc. should be provided by the UGC and State Governments through capital grants keeping in view the future growth needs of the library. Further, special grants should be sanctioned to enable it to build up a core collection of standard works in different disciplines.

5. The Commission should not approve any proposal for the establishment of a new department or the institution of a new course of study, speciality or research project unless the proposal contains full financial implications for library facilities in this behalf.

6. In the context of the exponential growth of published output and the inability of any university library to purchase more than a small fraction of this enormous volume because of its scarce financial resources and unabated price spiral, the need of observing strictly the rules of financial discipline and of avoiding wasteful expenditure can hardly be overemphasised. Optimal utilisation of limited funds through a judicious programme of spending calls for (i) careful book selection based on book reviews in learned periodicals or book reviewing journals, (ii) spreading the book acquisition programme evenly throughout the year and avoiding frantic efforts to utilise book grants at the fag end of the financial year (which only result in the procurement of trash and sub-standard books), (iii) avoiding duplication of titles as far as possible in order to add a larger number of new books, and (iv) making purchases on the most competitive terms with a view to ensuring the best possible utilisation of funds. The UGC should impress upon the universities the necessity of observing these and similar other guidelines to improve their economy through financial discipline.

7. Libraries like most social service organisations are labour intensive and do not possess a self-generating economy. Since they continue to face spiralling costs of all the inputs with stable or marginally increasing budgets, it is absolutely necessary that they should try to make the most effective use of their available resources. Application of the modern techniques of management will surely improve the level of efficiency and reduce operational costs in any university library. Management control studies about library operations should, therefore, be conducted in order to simplify procedures and accelerate the pace of work.

8. The UGC may either establish a Library Management Research Unit or sponsor management studies to carry out large scale investigations into problems of library management including systems analysis, budgetary techniques, survey of library users habits, inter-library comparisons, etc. The results of such studies should be communicated to university libraries in order to enable them to bring about necessary improvement in their management.

9. The world over the average recurring expenditure of a library on items other than staff (books and periodicals, building, contingencies, etc.) is equal to that on staff salaries. This ratio has been considered appropriate by a number of library experts and committees such as the UGC Library Committee of India and U.K. (1957; 1967) the Advisory Committee for Libraries (1957), etc. A developing country like India cannot afford to allocate more than 50% of the library budget to personnel costs. However, studies about some of the Indian university libraries have

evealed that the expenditure on staff salaries in their ase is as high as 60 to 65%. The UGC should see o it that no university library ordinarily spends nore than 50% of its total budget on the pay bill of ts staff. The university libraries should be advised o keep, without adversely affecting the provision of ervices needed by the academic community, the cost of establishment at the minimum so that a larger percentage of the budget could be spent on enlarging the collections of the library.

10. Manpower planning is of crucial importance in university libraries which have their budgets growing in a very disproportionate ratio to the spiralling costs of all the inputs. The introduction of new technology into libraries is creating a situation that demands a thorough review of the personnel system. Will the same number of staff be needed with new technology and what types of skills and abilities will be necessary ? The staff formula suggested by the UGC Library Committee (1957), which could hitherto serve only as a general guide and not as a standard prescription to be applied universally, now urgently calls for a thorough review because of the enormous changes that have since taken place.

Since budget constraints have become a way of life, the UGC should sponsor programmes to improve the existing manpower qualitatively in university libraries through in-service training, coaching and guidance, workshops and other orientation programmes. The engagement of subject specialists has now become essential in university libraries in this Information Age. Since the Indian university libraries cannot afford to employ subject specialists because of their poor finances, it is imperative for them to develop subject expertise in different areas within their available personnel resources.

Network Planning for Indian University Libraries

Networking of Indian university libraries is to be planned very carefully in the context of the present state of their under-development and lopsided development. The level of the application of computer technology in other libraries of the country and the technical expertise and infrastructure available at home are to be taken into consideration. For creating a network all the university libraries and other institutions of higher learning or the selected ones, to begin with, are to be computerised first and then inter-linked through a suitable telecommunication system. A decision with regard to the topology of the network (star network, fully inter-connected network or a ring network) is to be taken at the planning stage.

Objectives of the Network

The plan for networking should very clearly envisage the immediate as well as long term objectives of the system. Formulation of the objectives of the network will depend in a large measure on the extent of application of computer technology to house keeping operations by individual members. Libraries can use the computer for various operations and services such as acquisition control, cataloguing, circulation control, serials controls, reference service, bibliographical service, indexing and abstracting, financial control, administrative work, decision-making, etc. The contemplated networking of Indian university libraries may be done with the following objectives in view which, of course, will be achieved only gradually with the evolutionary growth of the system :

(1) Cooperative Acquisition : Resource sharing is the cornerstone of any network of libraries. No library in the world, however, financially well off and resourceful, can claim self-sufficiency to meet all the demands of its clientele. It will be preposterous to presume that a library will have *ad libitum* funds to purchase every printed document. The exponential growth of knowledge resulting in the out-pouring of the printed word and unabated rise in the cost of reading material of all formats has obliged the libraries to cooperate with each other in facing this challenging situation. The libraries of the network may, therefore, agree on cooperative acquisition and decide by mutual consent the subject areas in which each will endeavour for comprehensive coverage of the literature. Such an arrangement will obviously ensure optimal utilisation of the scarce financial resources of each constituent and result in a much larger coverage of the currently published output with the total resources of all the constituents that will be possible otherwise. The allocation of subjects may be made on the basis of the existing strength of collections of individual libraries in particular disciplines, languages or other areas of study as well as on the volume and quality of their research output in those fields. Universities which have for historical reasons specialised in certain fields or developed centres of advanced study in specific subject areas would obviously be a better choice for being assigned the responsibility of intensive collection development in those areas.

(2) Shared Cataloguing: necessary mechanism may be worked out by the participating libraries in this behalf in order to reduce the cost of cataloguing;

(3) Serials control;

(4) Union listing—production of computerised union catalogues of periodicals, serials, specials, collections, etc.

(5) Access to data base of the network for online information retrieval;

(6) Training and continuing education in information technology;

(7) Consultancy services in library automation and related fields;

(8) Direct provision of certain computerised services—indexes, abstracts, etc.

(9) Transmission of microfascimile copies of the required pages or documents, charts, figures, graphs, drawings, etc. by using computer terminals attached to the data bases of the network with printing facility;

(10) Facilities for access to a major bibliographic utility's services and products, e.g., DIALOG;

(11) Technical assistance and services in the use of various brokered services;

(12) Facilities for access to major national data bases;

(13) Coordination of expensive purchases and cooperation in conservation and preservation of holdings;

(14) Serving as an important component of the planned National Information System for Science and Technology (NISSAT); and

(15) Establishing close links with important national institutions and organisations and participating through them in the world science information systems of the various branches of science and technology, e.g., INIS, AGRIS, ASTINFO, etc. At present BARC and ICAR are functioning as national input centres for INIS and AGRIS respectively.

The above statement of objectives contains both short term and long term objectives, but is by no means an exhaustive one. Others may be added to it according to the needs of changing times. Objectives 10-15 may be categorised as long term objectives and can be attained only when the proposed network has gained stabil ity and grown into maturity.

Structure of the Network

The network may be conceived as a multi-tier system and may have the following levels with a data base at each level :

(1) *Institutional*: The university or institution having a number of decentralised libraries (e.g., Delhi University) or a system of departmental libraries (Aligarh Muslim University) may have an internal network for various purposes.

(2) *Consortium*: A group of institutions, usually geographically close, may be integrated into a network for shared acquisitions, circulation, interlibrary loan, larger bibliographic access, cooperative cataloguing, etc.

(3) *Regional:* The university libraries and libraries of other institutions of a particular region of the country may join together to create a network for sharing their resources in various library spheres.

(4) *Subject Oriented*: The institutional libraries in a particular field of knowledge, e.g., Medicine, Agriculture, Engineering and Technology may be linked together to constitute a network for achieving the desired objectives.

(5) *Linguistic*: India being a multi-lingual country, it is essential that networks of university and institutional libraries should also be evolved on linguistic basis for exhaustive coverage of various disciplines in all the Indian languages listed in the Constitution. Creation of such computerised networks would, however, be possible only when software in various Indian languages is available.

(6) *National:* Networks at all sub-levels should be integrated to form a comprehensive National Network of University/Institutional Libraries with a much larger scope of objectives than that of any subsidiary network. The National Network will *inter alia* plan, direct and coordinate the activities of the networks at all other levels of the system. It will also maintain its links with other important national and international networks.

Infrastructure for the Network

The creation of the proposed network will need the following infrastructure :

(1) *Computer Hardware :* All the libraries joinng the network will require computer hardware to utomate their important house keeping operations. If some of the university/institutional libraries lready have mini or micro-computers or their parent institutions possess large frame computers, the problem of hardware in their case will be of a different nature. In such cases supplementary efforts to augment the existing computer facilities or to provide terminals for using the large frame computer might be required. However, the number of such libraries will be very few at present. In a large majority of cases the University libraries will have to be provided with hardware to enable them to join the network. The choice of the hardware, that would be most suitable for the purpose and also economical at the same time, will be an important decision at the planning stage.

(2) *Software :* It is necessary that all the constituents of the network should use the same system software to facilitate quick on-line interaction between each other and to ensure optimal functioning of the whole system. Use of different softwares by different libraries will obviously obstruct on-line information processing and retrieval and also create the problem of transforming several softwares into some standard software system at the national and regional levels. The CDS/ISIS version of the UNESCO, which is a mini-micro-computer based. Computerised Documentation System, is very suitable for libraries and documentation centres. India being a signatory to the CDS/ISIS licence agreement, it is available to Indian institutions and libraries free of charge.

(3) *Telecommunication System :* Telecommunication system is of vital importance for establishing a network of libraries and information centres by interconnecting computers located at various places. On-line information processing and retrieval is rendered possible only through the telecommunication channel. The constituents of a network may be linked with each other via the telecommunication circuit switching method or the packet switching method. Today links may also be provided in many other ways, e.g., by cable, terrestrial microwaves or via earth satellites.

(4) *Uniform Standards and Specifications :* For the effective, efficient and quick functioning of the network it is also necessary that all the libraries of the system agree on using uniform information storage and retrieval standards—cataloguing code, indexing and abstracting standards, specifications for periodicals recording, etc. Use of variant practices by the constituents of the system will obviously obstruct on-line information processing. The UGC may form a committee of University Librarians and computer experts to make recommendations in this behalf. It would be better if ISO standards are adopted to facilitate exchange of information among different systems.

(5) *Technical Manpower*: The network must have adequate personnel qualified in information technology to plan, develop and run the whole system. However, at present there is a great dearth of such technical manpower in the country. This shortage can be met by getting the required number of library staff trained in computer application. Such a course of action will also be desirable in the context of the present financial problems of university libraries as it will not put additional strain on their already tight budgets. The UGC should, therefore, sponsor in right earnest programmes for intensive training of the library staff in informatian technology with the cooperation of such organisations and institutions as the INSDOC, DESIDOC, SSDC, DRTC, etc. With resource personnel drawn from suitable organisations and institutions, such training programmes can be easily arranged State-wise or region-wise in universities where computer facilities are presently available.

The establishment of the proposed network of university/institution libraries will clearly entail a heavy financial outlay. However, the investment will be worth making in view of the importance of 'Information' as a resource in national development in the present 'Information Age'. The proposed network will also form part of the comprehensive National Information Network which is so essentially needed today to accelerate the pace of research and development in the country.

With their budgets already over-strained, it will not be possible for universities to make any substantial investment from their own resources to computerise their libraries and to contribute towards the costs of the network. The scheme can be implemented only with liberal financial assistance from the UGC and the State Governments. Since education is a subject of shared responsibility between the Centre and the States, the UGC and the State

There are few situations in which all the alternatives are known, and in which their effectiveness can be unequivocally determined. In the face of these uncertainties, some decision makers may be reluctant to make any decisions at all. Still others may be psychologically challenged to take the responsibilities for high-risk decisiveness.

Thus, the structured decision process must be thought of as a prescriptive guide. It cannot be rigidly applied to most management problems. And it certainly cannot be expected to make decisions for us. But it can be used to guide us through the often complex maze of real world decision-making. It is a systematic process that forces us to consider all the aspects in their proper order. It aids in sharpening decision-making skills and analyses. It can point out otherwise hidden aspects and enlarge our awareness of the total decision system.

Elements of Decision Making

Though decision processes usually differ with the nature of the problem, the situation and the individual decision-maker. Figure 1 presents a general picture of most decision processes. This model depicts decisions as being precipitated by the recognition of problems or opportunities. If the problem or opportunity is perceived as routine, the decision-maker may go immediately to the selection of the best alternative solution. If the problem of opportunity is familiar, then little time may be devoted to its definition. If the problem or opportunity is well-defined, then the search for alternative solutions or ways to take advantage of the opportunity may be brief. If the relative effectiveness of the alternatives is known, then very little time may be spent in analyzing and evaluating the alternatives and deliberating about the best one.

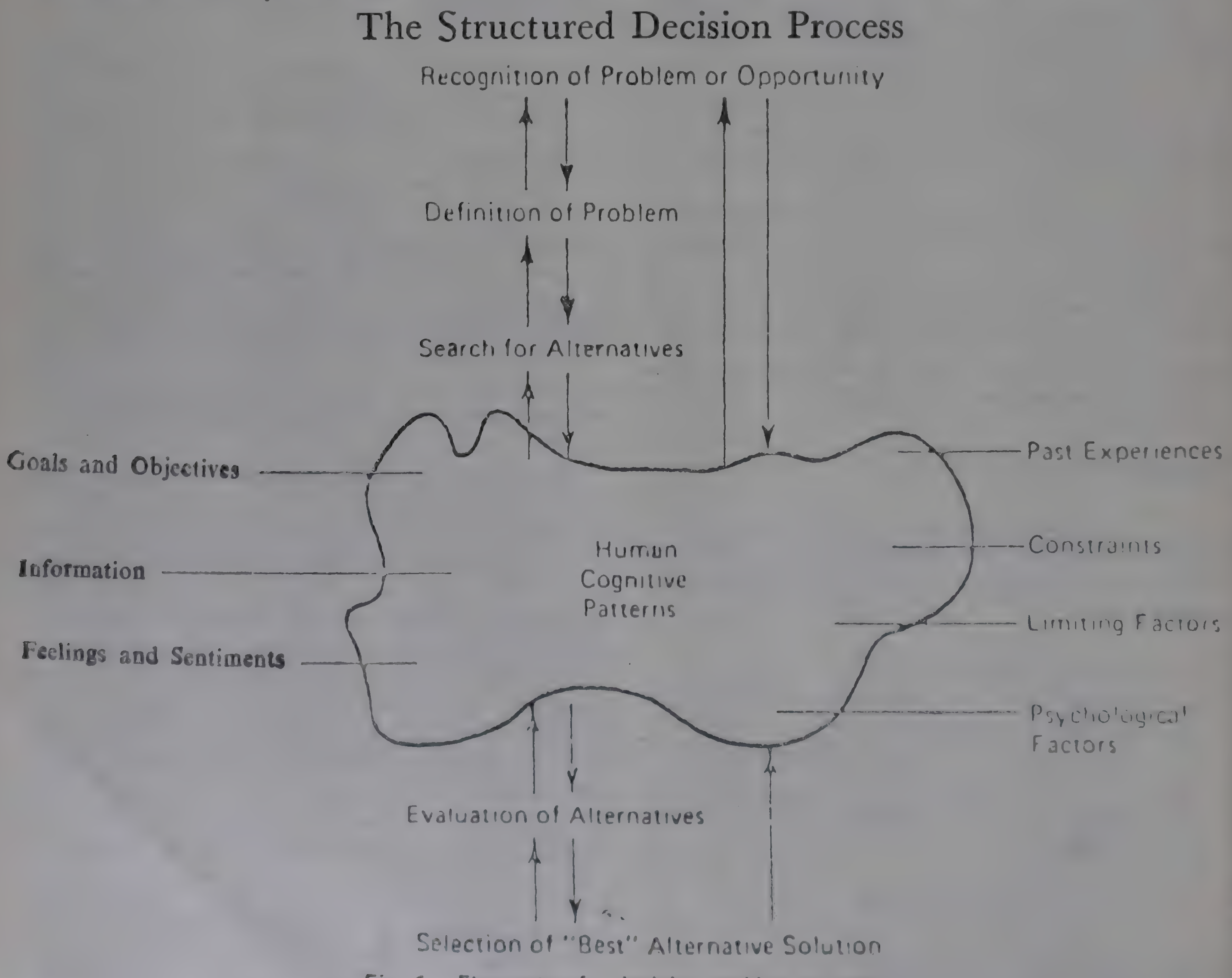
The Structured Decision Process
Recognition of Problem or Opportunity
Definition of Problem
Search for Alternatives
Goals and Objectives
Information
Feelings and Sentiments
Human Cognitive Patterns
Past Experiences
Constraints
Limiting Factors
Psychological Factors
Evaluation of Alternatives
Selection of "Best" Alternative Solution

Fig. 1 : Elements of a decision making process

In terms of the Figure, the nature of the problem may influence whether or not the decision-maker moves through the process slowly or quickly. If the problem is a routine one that is solved by habit, then the decision-maker may jump from problem recognition to the selection of the best alternative solution. If the decision is one that has been preprogrammed, then the decision-maker may skip the problem definition and the search for alternatives. In a preprogrammed decision there are a finite number of alternatives with known effectiveness, and the decision-maker must match up the appropriate alternative with the problem stimulus. An example is deciding what clothes to wear in the morning. The problem stimuli include the weather and the planned daily activities. Sunny, warm weather and recreational activities require one kind of wardrobe, while other weather and other activities require different appropriate dress.

If the decision problem is complex or poorly understood then the decision process may be quite lengthy and deliberative. As Figure shows, there may be considerable recycling back and forth within the process. The search for alternatives may result in information that further clarifies the problem or suggests its redefinition. New alternatives may be discovered during the processes of evaluating and analyzing the original set of alternatives. The best alternative may not be apparent from the original set, and a new search for alternatives may be undertaken. Thus, the decision making process may be very heuristic and iterative in nature.

An Algorithm

Figure—2 presents an algorithm for the structured decision-making process. This algorithm describes the various steps that are performed within the structured decision-making process, and shows the relationships between them. This algorithm is a general one that applies to a variety of types of problems and situations.

A decision involves many intuitive and deep-seated cognitive mechanisms that cannot be observed or directly influenced. What can be influenced are the behaviour patterns, the analytical procedures and the sequences of logic that are followed in making a decision. These are the elements of the decision-making process.

The elements are often haphazard, unsystematic, inefficient and ineffective. Improvements may be sought through the application of the structured decision-making process. Improvements can be expected in the following eight areas. One, more timely sensing and recognition of emerging problems and opportunities. This will enable the decision-maker to have more time to devote to the problem and to take earlier actions. Two, a greater depth of comprehension and a more accurate identification of the real problems and opportunities. Thus, the chances of operating on false symptoms or solving the wrong problems will be reduced. Three, more logical and higher quality alternative decision choices and strategies. Since the quality of the final decision is limited by the quality of the available alternatives, improvements in the alternatives will translate directly into improvements in the final decision. Four, a detailed specification of the articulated goals and standards. This will bring the problem-solving activities close to the organizational or individual goals and the long range plans. Five, a comprehensive evaluation of the benefits, costs and regrets of each alternative. The resulting expanded information base will permit the decision-maker to exercise more enlightened judgments. Six, intuition, bargaining and political processes will be reduced in favour of more rigorous, systematic comparative analyses as the basis for selecting the overall best alternative. Seven, effective contingency plans and other preparations. Eight, through the use of behavioral techniques and group methods, the chances of implementation of the decision.

Individual Decision Settings

The settings can dramatically influence the nuture of the decision-making process and the resulting decision. In the individual setting, the individual's own personal values, perceptions and aspirations largely control the decision-making. The individual is free to act at will.

Economic, strategies, satisfying and behavioral approaches may be taken to decision-making in the individual setting. The economic approach presumes that the decision-maker has perfect information, and can compute the statistically best decision choice. Though these assumptions seldom hold in most real situations, the economic model contains many useful analytical techniques and some important lessons for the individual decision-maker. Indifference point and dominance analyses are very useful general techniques that can help clarify the decision maker's options. One of the important lessons is that a

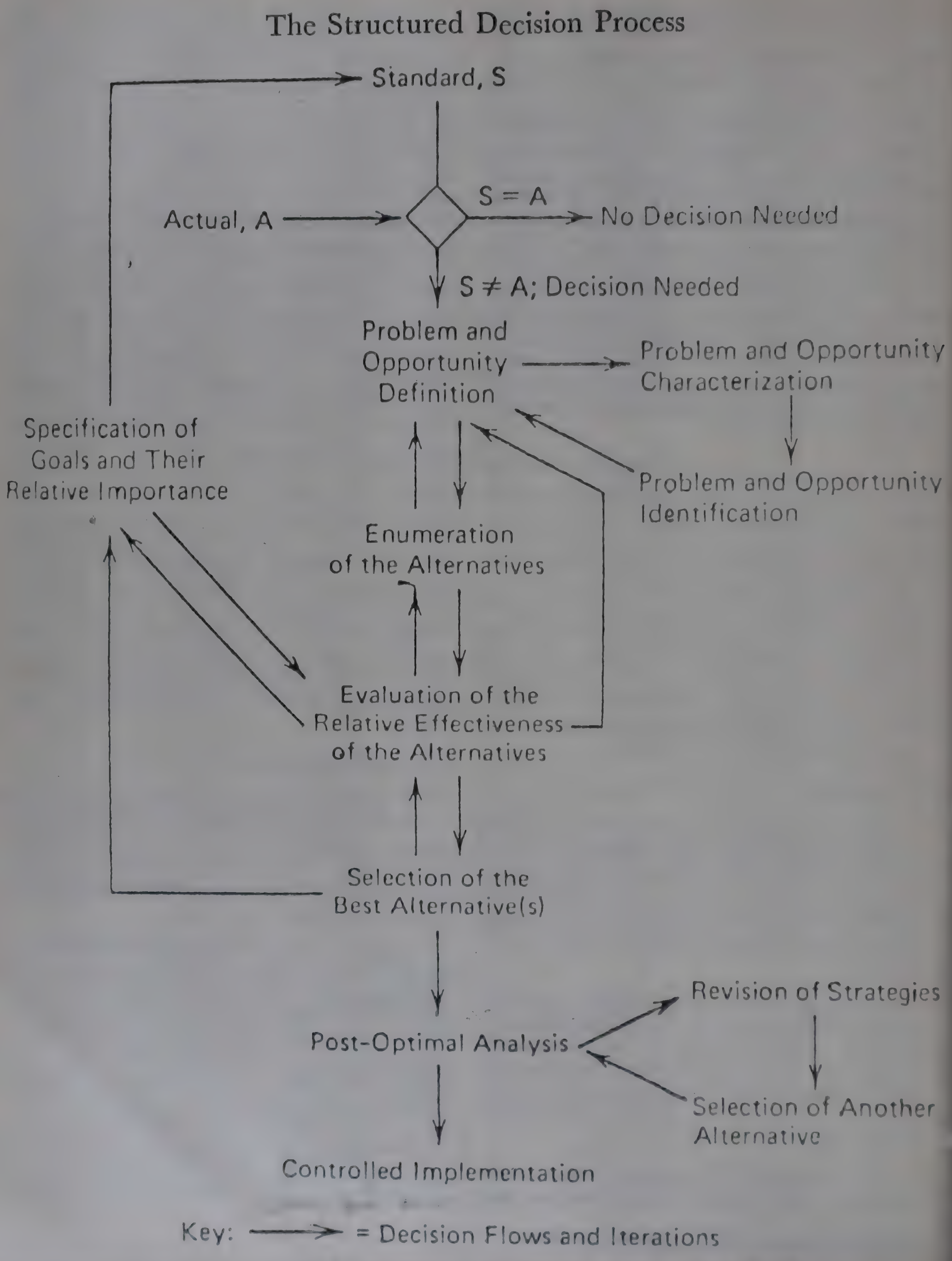
The Structured Decision Process
Standard, S
Actual, A
S = A
No Decision Needed
S ≠ A; Decision Needed
Problem and Opportunity Definition
Problem and Opportunity Characterization
Problem and Opportunity Identification
Specification of Goals and Their Relative Importance
Enumeration of the Alternatives
Evaluation of the Relative Effectiveness of the Alternatives
Selection of the Best Alternative(s)
Post-Optimal Analysis
Revision of Strategies
Selection of Another Alternative
Controlled Implementation
Key: ⟶ = Decision Flows and Iterations

Fig. 2: Algorithm for the structured decision making process.

andom choice of alternatives may be just as good as ny other choice. The strategies approach sensitizes he individual decision-maker to the fact that partiular decision choices reflect different risk-propenities and value-orientations. This approach permits he decision maker to select a blend of alternatives hat achieves a desired livel of risk-reward trade-offs. The satisfying and behavioral models show how the individual's level of needs and aspirations can influence the search for better decision alternatives.

Each model is appropriate for handling different situations, and the most effective decision-maker recognizes when to use each one. In general, various elements and aspects of each model can be mixed together and used to provide a powerful combined approach.

Group and Organizational Decision Settings

In a group setting, individual actions may be constrained by a variety of interpersonal pressures and group dynamics. In an organizational setting, many complex forces may influence the decision-making. In addition to group phenomena, organizational settings exhibit intergroup interaction phenomena and formal subordinate-superior behavior patterns. Organizational settings are also characterized by diffuseness, splinteredness and information-sharing barriers that may block the decision flow. Thus, different approaches are needed in order to achieve an effective decision in these different settings.

Leadership failures, specious persuasion, bandwagon and snowballing effects, and the tendency for groups to break into small factions are major obstacles to effective group decision-making. Proper training and process management of decision-making groups is needed if these obstacles are to be overcome. Several process management methods are available for increasing the effectiveness of decision-making groups. These methods include the nominal-interacting (NI) decision-making format, techniques to ensure that the group cycles through the task and socio-emotional phases, and feadback methods that guide the accommodation and maturation of the group.

The opportunities for factions, coalitions, bargaining, power plays, and politics are greatly increased in organizational settings. An organization consists of many different overlapping groups that are held together by a mutuality of interest and a formal structure of superior-subordinate relationships. This mutuality of interest is often very tenuous. Each group or formal department may have basically dissimilar goals and desires. The formalization of these groups into departments and divisions enhances a spirit of non-cooperation and separateness. The application of organizational joint problem solving methods, task force study committees and group process management methods can overcome some of these problems.

Group settings can benefit greatly from the application of the structured process. The structured process can help focus and channel the group behavior patterns, thought patterns and analyses. However, the structured process must be used in combination with group consensus and group management methods like the NI process, in order to handle group interaction and interpersonal dynamics phenomena. The organizational setting can similarly benefit from the application of the structured decision-making process. However, structured decision-making cannot be effectively used unless it is combined with organizational joint problem solving methods and task forces or other linking arrangements. These methods are needed to cope with the diffuseness, splinteredness and behavioral barriers that usually characterize organizational settings,

Defining Problems, Opportunities and Alternatives

No decision can be any better than the preparation that goes into it. The careful definition of problems, opportunities and alternatives is a critical aspect of this preparation. The exception principle, the deviation check and the management audit may be used to assist in problem definition. A pro-active posture of seeking out weaknesses and potential problems before they actually occur is the most effective approach for coping with today's rapidly changing society. A pro-active posture is absolutely necessary for the timely identification of emerging opportunities. Many environmental monitoring and technological forecasting techniques are available to help the decision-maker identify opportunities.

The generation of creative solution alternatives is especially important to effective decision-making. Insufficient emphasis is usually placed on generating a wide diversity of alternative solutions. The quality of the final decision can only be as good as the quality of the field of choices available. Several analytical techniques and creativity methods are available to assist the decision-maker in generating alternative solutions. Training, careful selection of group members and proper group management methods are needed in order to be successful in using many of these techniques.

Decision and Fault Trees

Considerations of trust, openness, participation, sense of ownership and organization change are relevant to the process of inducing the adoption of suitable model. To some individuals in the organization it may seem intuitively obvious that it is good to have many alternatives and their consequences systematically displayed. But to others in the organization this may be viewed as providing self-exposure to external criticism. These issues must be resolved as a prerequisite to successful implementation. Overall, a major consideration is the balance between the cost of getting believable data for the model and the benefits derived from it. The data must be believable. The process must not be looked upon as "just another exercise." Achieving this is largely a matter of building good cooperative relationships, and constructing suitable and useful models.

Program Planning and Budgeting

The effectiveness of program planning can be improved by devoting proper attention to the commitment horizon, the flexibility and navigational change principles, and the most limiting factor concept. By involving all levels of the organization in participation in the planning exercises, by using some simple motivational methods, and by carefully paying attention to basic human needs, a planning culture can be instituted. Modern cash budgeting and capital budgeting techniques, PPBS and ZBBS methods, GEMPA charts and other systems concepts can thus come to be a natural part of the daily decision-making processes within any organization.

These techniques and processes provide the basis for the application of funding models. Such models can significantly aid in reducing the arduous clerical chores in budget development. They can also increase the capability of the decision-maker to develop budgets that are neither too small nor too large, and to ensure that these budgets are consistent with the organizational goals and performance targets.

Evaluating, Implementing and Controlling the Decision

The overall effectiveness of any decision is a product of its quality, implementation and control. We have reviewed several approaches that may be used to maximize the effectiveness of a decision. A manager who follows these approaches in using the structured decision-making process and the techniques discussed here should be able to dramatically improve the overall effectiveness of the decision-making process.

However, a mechanical approach to the application of the structured decision-making process and the techniques discussed will lead to many disappointments. The key to effectiveness in decision-making is the style, leadership, risk-taking, boldness, judgment, assertiveness and decisiveness qualities of the decision-maker. There is no substitute for "taking the bull by the horns," so to speak. The techniques and approaches presented above can significantly augment these qualities. But they can never substitute them. It is the synergism of the structured decision-making methods and the qualities of the decision-maker that make the difference between an effective and ineffective decision.

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NURSING EDUCATION

"The Planning Commission had approved a scheme for training of nurses under the programme 'Continuing Education for Nursing Personnel' and has also allocated a sum of Rs. 40 lakh for the purpose. In three years no initiative has been taken", disclosed Prof. P.N. Srivastava, Member, Planning Commission, while delivering the Convocation Address at the College of Nursing of the Postgraduate Institute of Medical Education and Research, Chandigarh. The project is aimed at updating teachers in schools of nursing with latest trends in health care delivery system with special reference to primary health care. It is essential that their knowledge and skills are updated to enable them to perform their teaching responsibilities in tune with latest trends in the subject, he added. Excerpts

India is a large country with about 700 million people. About 40 per cent of our population still lives below the poverty line. With its large population, our problems are also large and stupendous. In India we have one doctor for a population of about 2600 persons which is bad but not too bad since the corresponding figure for China is 1730 and for Sri Lanka 7620. However, our doctors are concentrated in urban areas. We are aware of the fact that suitable facilities and incentives will have to be provided so that the doctors not only serve the rural areas but in fact live in rural areas.

As against the figure for doctors, the figure for nurses is much worse, or rather deplorable, one nurse for 4670 persons whereas China and Sri Lanka have 1670 and 1260 per nursing person which is far better and we have a very very long way to go even as compared to China and Sri Lanka, what to talk of countries like U.K. where the number of population is 120 per nurse/midwife. Health and Education have always received a raw deal in our country but I am happy that the climate is changing and I am sure there will be considerable stepping up of plan expenditure for health and family welfare and let me assure you that nursing will get a fair deal.

But planning is one thing and its implementation another—altogether different. I will give you an instance. When I accepted the invitation to come here today I started looking into the plan documents in connection with nursing and I was amazed at the recommendations. In your National Education Policy and Nursing Workshop Recommendations, the first item reads thus "A correspondence course in nursing be established for registered diploma nurses in the country to obtain B.Sc. degree in nursing. To start with, a pilot project may be started in a University". Will you believe it that the Planning Commission had approved a scheme for Training of Nurses (Continuing Education for Nursing Personnel) and has already allocated a sum of Rs. 40 lakhs for this purpose. In three years, no initiative has been taken in this matter and just before coming here, I have written a letter to the Minister of Health and Family Welfare in this connection. I will like this college to take initiative in this respect and let a beginning be made immediately. In this project it is proposed to update teachers in Schools of Nursing with latest trends in Health Care delivery system with special reference to Primary Health Care. It is essential that their knowledge and skills are updated to enable them to perform their teaching responsibilities according to latest trends in health care delivery system. Correspondence course in nursing for registered diploma nurses was not thought of but you may prepare a project which can always be examined. In principle I have full agreement.

Apart from the above, there was still another significant recommendation. The proposal was to bring together representatives of nursing personnel from all the States and Union Territories to discuss and debate on issues of national importance in Health Care Delivery System and its implications on Nursing Education and Nursing Services. This body of Nurses could act as an advisory body for preparing National policies of Nursing Education and Nursing Services. The members of the Indian Nursing Council and Trained Nurses Association will be involved in such a meeting. A sum of Rs. 1 lakh/year was allocated for this but a beginning has not been made yet. It is in such areas that I will like institutions like Post-Graduate Institute of Medical Education, Chandigarh and the All India Institute of Medical Sciences in Delhi to take initiative and guide us.

Nursing is a great and noble profession. Mrs. Samuel in her annual report has defined as a process of action, reaction, interaction and transaction whereby nurses assist individuals of any age group to meet their basic human needs in coping with their health status at some particular point of their life. Every nurse must understand and accept the fact that "Nursing's power rests on Practice". We are all aware of the great hardships in which you work. It will be your greatness not to forget compassion, consideration and kindness even under the greatest of hardships in which you work. Wholehearted support of the public is needed to raise the public image of nurses in India. This will not only improve the recruitment to this profession but also their morale which will ultimately improve their practice. □

Monitoring and Implementation of National Policy on Education

Dr. B.M. Udgaonkar, Former Member, University Grants Commission and Director, Tata Institute of Fundamental Research, delivered the Valedictory Address at the Third Seminar on 'Monitoring and Implementation of National Policy on Education' organised by the Association of Indian Universities at Pune on 27-29 June, 1988 (*University News*, 11th July, 1988). Dr. Udgaonkar posed the fundamental question as to what constitutes a university and said that every university must move to a centre stage meaning thereby that it should build excellence. He did not agree with the suggested distinction between education and training and maintained that every education has a component of training and every training has a component of education. Though he felt legitimately proud of his role in introducing Extension as the third dimension to university education, he decried the large gap between social activity and academic pursuits. He suggested high level of research in extension work to remedy the situation. On the language question, he felt the place of English has to be decided vis-a-vis regional language as the medium of instruction. The structuring of courses, he said, should be more than syllabus writing and sheer number of students may completely alter the concept of restructuring. He was happy that after nearly a decade the concept of autonomy has been accepted. He pleaded for a target oriented approach and said that every college must be autonomous by 2000 A.D. He also suggested organising norms setting examinations at the national level by the proposed National Testing Service. He reiterated that the university must realise the collective responsibility for excellence and build credibility in its working.

The following recommendations emerged after intensive deliberations at the seminar :

Secondary Teacher Education

(1) On the question of comprehensive training programme to be organized by educational colleges and University departments for primary and secondary school teachers, it was felt that there was a strong case for considering such a scheme at the University level. However, it was affirmed that the University education department/college of education and other proposed structures lik DIET as well as other agencies at the State level, concerned with teacher training, would have to work in close collaboration and establish proper linkages in order to set up such a comprehensive training programme.

(2) There was scope for conducting research in educational training with dynamic linkage between research and training processes at the various levels in the University. It was considered necessary to provide incentives for conducting research in this area.

(3) The group categorically expressed its concern at the tendency in some Universities to promote educational training at the first degree level through correspondence. It was felt that such courses should not be encouraged and the ones that are in operation should be terminated.

(4) It was stated that many government schemes particularly those of the Government of India are not circulated widely to the Universities and therefore the Universities are not able to take advantage of these schemes. Information about these schemes is generally sent only to the State Government agencies. It was, therefore, proposed that all such Government of India Schemes should cover the Universities for participation. Specifically, it was stated that the funds under such schemes should be made available directly to the Universities rather than through the State Government Departments.

(5) The UGC should formulate and enforce objective criteria for the establishment of advanced centres of studies in education at the various Universities.

(6) There should be enough provision in the UGC scheme for orientation of teacher trainers in the schemes under NPE and POA.

(7) It was suggested that language teachers should be given adequate training in teaching of third languages under the Three Language Formula in the backdrop of NPE and POA. Available facilities for this training should be fully exploited and newer avenues may be explored.

In-service Education of Teachers

(1) It was agreed that in-service refresher programmes for teachers of sccondary schools as well as primary schools should be organized by B.Ed. colleges and Departments of Education in the Universities so as to provide in-service training to each teacher every five years.

(2) Academic Staff Colleges should similarly understake Facu-

ty Improvement Programmes at University level.

Teachers and the Planning and Management of Education

(1) It was observed that there was involvement of teachers at various levels of University and college administration in all the Universities in the region, though there was no single uniform pattern of teacher's representation on the various bodies. By and large teacher representatives on various bodies in colleges and universities are selected through elections. While this fulfils the condition of involvement of teachers, it did not always lead to healthy practices. It was reported that because of this system, experienced and senior teachers tended to stay out of the various academic bodies in the University. In view of this, it was suggested that teachers' representation on various bodies of the Universities should be by nomination and Ex-Officio representation by seniority and rotation. It was felt that this would ensure, on the one hand that experienced and senior faculty members would participate in the management of the affairs of the University, and on the other, it would discourage unhealthy practices which have become a part of the electioneering culture in the Universities.

(2) In some universities, under the existing provisions, it was possible for the members of the lay public to be elected on the University bodies and in some cases such non-specialized members were elected to the positions of academic responsibilities. It was, therefore, suggested that only teachers with adequate expertise and background should be represented on the various academic bodies of the Universities to ensure both proper representation and effective management.

(3) It was argued that in most cases teacher representation could only be limited to a very small number of people. In order to ensure wider participation of teachers in decision-making and administration, departmental councils should be established in the University and college departments where all members of a particular department would be members of the council. This would ensure 100% involvement of all college and university teachers in academic and administrative affairs of these institutions.

(4) It was suggested that the Association of Indian Universities (AIU) may prepare draft Model University Act keeping in mind the various aspects of educational planning, management and implementation in the light of the development of the Indian Universities and higher education in general. The AIU should submit such a Model Act to the UGC for further discussion and recommendation to the various state authorities for adoption at the state level. AIU should be represented on the UGC Committee on Model Act.

(5) It was suggested that the highest positions in the University like Vice-Chancellor, Pro-Vice-Chancellor should as far as possible be filled by educationists rather than people from other professions.

Living and Working Conditions of Teachers

(1) It was pointed out that there is disparity in the scales of Principals of Colleges of Education and other colleges. This disparity arises from the fact that the colleges of education do not have large students strength and therefore, the Principals are given the Reader's scale as against the Professor's scale in general colleges with large students population. It was, therefore, recommended that the criterion of number of students for determining the scale of pay of Principals of B.Ed. colleges, should be changed and they be given the same pay scale as Principals of general colleges.

(2) It was reported that when teachers proceeded on study leave, salary of substitute teachers was not made available to the colleges/Universities by the state authorities/UGC. This created a number of difficulties like the posts not being filled, or the teachers proceeding on study leave not being given salary during that period. It was, therefore, recommended that provision for salary of substitute teacher in place of teacher proceeding on study leave be made available.

(3) It was felt that the Universities should have flexibility in creation of additional senior posts, if required due to demand of subject specialization or if some senior and aminent teachers are available in the department who could not get promotion due to limited number of senior posts.

(4) Adequate liberal housing loans funds should be made available to teachers for constructing houses. For this purpose it was suggested that rotating funds may be created at the college/university level.

(5) Housing for women teachers may be given due consideration.

(6) Adequate space should be made available for all the staff members at the college/university

level for office and academic purposes.

(7) When a teacher moves from one University to another in the same state or in another state, he should be allowed to carry with him service benefits that have accrued to him in his previous employment. It was felt that such a move would be in consonance with the provisions of NPE and POA of providing greater mobility to college end university teachers.

(8) All college/university teachers should be given LTC facilities on the pattern of central universities.

(9) It was reported that some private educational trusts/societies in the region tended to transfer teachers and principals from one college to another, sometimes from one University area to another University area, causing hardship to the teachers. Such practices by private educational societies should be discouraged.

Grievance Removal

(1) Minor grievances should be resolved at the University level through a committee of Executive Council. However, there must be provision for an appeal to a quasi judicial tribunal in case a college/university teacher, so desires.

(2) Central Educational Tribunal benches at the state level as recommended by the Law Commission may be established.

(3) Summaries of judgements for Principals / Vice - Chancellor should be made available.

(4) Orientation of Principals/Deans/Vice-Chancellor in the process of tribunal must be undertaken.

Restructuring of Courses

(1) The UGC pattern of Foundation Course+Core Courses+Applied Courses may be expanded to include Vocational Courses and Personality Development Courses.

The weightage of different courses proposed is as under :

Course	UGC weightage	Proposed weightage
1. Foundation	25%	8%
2. Core	50%	67%
3. Applied	25%	15%
4. Vocational	—	10%
5. Personality Dev.	—	Some weightage to be given
6. Project work	—	—

Under the proposed restructured programmes science stream had more contact hours per week than commerce and arts streams. It was therefore suggested that the contact hours for the arts stream should be increased to that of commerce which at the moment is around 25 contact periods.

(2) It was agreed that foundation courses should include

—India's composite culture

—Women Studies

—Value education (care for the old)

These topics would be in addition to other topics such as scientific temper, History of India, environment protection, population, etc.

(3) It was agreed that weightage/recognition must be given for participation in creative co-curricular activities like NSS, NCC, Adult Education, Sports and Games, etc.

(4) It was suggested that special funds should be made available to universities and colleges undertaking reorganization of courses under the NPE and POA.

(5) It was agreed that while a uniform model of restructured courses should be implemented at the regional or national level, the specification of courses under the various components, especially the application and vocational components, would depend on local conditions and local needs of region.

There is at present no uniform pattern of the number and choice of subjects at the B.A./BSc./B.Com. level in various universities. Honours and General or Pass courses are taught at different universities. In the restructuring a clear distinction needs to be made amongst these especially in the context of admission to the Master's programme in various faculties.

Education for Women, SC and ST, Backward Minorities and Handicapped

(1) Empowerment of women would be possible through curriculum revision and proper restructuring of courses.

(2) Every university and college must have a Women's Studies Cell.

(3) Education for women's equality is the responsibility of all sections of the society. Voluntary agencies and university should join hands together instead of working individually at all levels. It requires synthetic approach and should be dealt in its totality. It is not the concern of women alone.

(4) Courses should be devised with emphasis on education for women's equality. These courses should be common for boys and girls. The work done by NCERT in this direction was highly appreciated.

(5) Our goal should be development oriented education for women. Foundation courses for women should be introduced as a part of course component.

(6) Awareness of Women's problems should be created through all media—folk media as well as mass media. Street plays must be organised to arouse awareness in society about the equal status of women.

(7) In adult literacy, women's education should be given top priority. There should be circulating libraries to spread reading habits amongst women for post literacy period.

(8) There is need for training of ore nurses. Proper care should be aken for women's health education. rovisions must be made for them n education for health care.

(9) All state assistance should be provided for formal as well as non formal education of women. In Gujarat, women's education is free at all levels. This has resulted in creation of favourable response. Other states may follow suit.

(10) Women's polytechnics should be established in large numbers. Skill development linked to work opportunities should be developed.

(11) Courses with sexist-bias and streotypes from school textbooks should be eliminated.

(12) In every college library a corner should be reserved for literature regarding women's education. One of the papers in examination should be introduced in examination in lieu of other papers.

(13) Various types of incentives should be given i.e. marks, etc. Scholarship, admission and recruitment, the age of entry should be relaxed.

Scheduled Castes/Scheduled Tribes

(1) There should be coordination between state, centre, universities and voluntary agencies to avoid overlapping and duplication.

(2) SC/ST cells should be established in the colleges.

(3) Adequate reservation should be there in educational institutions for admission especially upto high schools which should be effectively implemented.

(4) Effective ways should be sought for payment of scholarships to SC/ST students in time.

(5) Remedial courses and measures must be introduced to upgrade their educational standard.

(6) Special classes must be arranged for training for IAS and other competitive examinations.

(7) Funds and staff should be available from UGC or State Govt. for implementation of SC/ST welfare programmes.

(8) Social conditions should be created through formal and non-formal education to accept SC/ST students on equal basis. Textbooks can be prepared by NCERT.

Minorities

(1) The definition of MINORITY must be more specific. It should be defined by law in more specific way.

(2) Voluntary agencies must work in cooperation with universities.

(3) Additional training programmes must be arranged.

(4) National integration and secularism should be made part of textbooks.

(5) More community polytechnics should be established.

Handicapped

(1) Special institutions should be established to meet their needs.

(2) Special Research programmes should be taken up to study their problems of education.

(3) Social awareness should be created to generate confidence in handicapped persons.

(4) State Govts. should also take more interest in the uplift of handicapped through educational programmes.

(5) All available opportunities must be widely notified.

(6) Training of research personnel should be given priority.

EXTENSION

(1) Education and productivity must be combined.

(2) Extension work should be considered at par with research and teaching work.

(3) It should be measured in such a way that teachers' contribution should be counted in work load.

(4) Other modalities for giving credit for extension work ought to be considered.

(5) Ph.D. degree should also be given in case of research in extension work.

(6) Coordinators should be appointed in colleges also.

(7) There is need to ensure equity, efficiency and equality in extension work.

(8) Non-viable units can be turned into community colleges and they should be made autonomous.

(9) The university should discharge its responsibility towards society through community colleges.

(10) University and all development agencies must work together in extension programmes through proper coordination.

(11) Teachers should be taken into confidence in implementation of rural programmes.

Research

(1) Interdisciplinary research should be encouraged.

(2) There should be proper reporting system about all the research programmes and research performances.

(3) There should be a research committee in each university for guidance.

(4) Every university must have its own research base.

(5) Regional media must be used for development.

(6) Models of Agricultural Universities in this direction can be followed.

(7) Research worker and university should be fully equipped.

(8) Work already done must be brought to the notice of research worker.

(9) There should be greater opportunities, and inbuilt checks and balances.

(10) SC/ST and Women should be encouraged to take up research work. □

Open Universities Network Planned

Prof. G. Ram Reddy, Vice-Chancellor of Indira Gandhi National Open University and Secretary General of the newly formed Asian Association of Open Universities, revealed that plans were afoot for co-operation in the field of distance education among the countries of Asia. He said that by exchanging course material among the member countries of the Association both time and money could be saved.

India, Pakistan, Sri Lanka, Thailand, Indonesia, Japan and Korea have already become members of the Association and China is expected to join soon.

Prof. Ram Reddy said though the National Open University was inaugurated in India only in November 1985, it has already on its rolls some 32,000 students. While a detailed and systematic survey to identify the areas in which courses have to be started is still underway, the University has already introduced some diploma and degree courses. Early in 1986 the university introduced a diploma course in distance education. This was done keeping in mind the university's own need for thousands of personnel to make the concept of distance education a success.

The other diploma programmes started by the University are in management, rural development, food and nutrition and creative writing. This year the university has also started enrolling students for BA and B. Com undergraduate courses.

Next year the National Open University will, for the first time, introduce science undergraduate courses.

The courses at the Open University would be different from the ones offered by conventional universities. First, the students will go through a foundation course in science, technology and humanities and then the core course.

With the establishment of more open universities by various state governments (at present besides the National Open University there are only two other open universities in the country, Andhra Pradesh and Rajasthan), it is envisaged to establish a network of open universities. Once the network is established a student enrolling in any one of the open universities will be able to avail of the material from any other Open University.

UGC Promotes Inter-University Centres

The University Grants Commission (UGC) is promoting establishment of inter-university centres in specific disciplines to nurture scholarship and advanced research. These centres will pool together talents and resources from all universities to grow into centres of excellence. According to Prof. Yash Pal, Chairman, UGC, the rationale behind the Inter-University Centres, was that universities contained vast pools of potential manpower in the form of students but modern facilities were available only under the aegis of national laboratories. By interaction university departments will grow in research and improve in teaching while national laboratories will be able to tap academic talent, he said.

These centres will have independent governing bodies, enjoy autonomy like the universities and get funds from UGC and Government. The first such venture has taken shape as the Inter-University Accelerator Centre or the Nuclear Sciences Centre in New Delhi. The second one will be the Inter-University Centre for Astrophysics to be located in the Poona University campus, where the world's largest and versatile giant metre wavelength radio telescope will be installed.

Prof. Yash Pal said UGC wanted the universities to explore every possibility of interaction with national science and industrial research laboratories by having a system of mutual associateship. Scientists in national laboratories can be made associate members of university centres of advanced research, he said. Similarly teachers and students of universities can be taken in as associate members of the national facilities.

Prof. Yash Pal said the Nuclear Sciences Centre in Delhi will have several experimental facilities including the 15 million volt tandem accelerator which will be ready by the end of 1989. UGC has provided funds to the tune of Rs. 5 crore for the project, registered as a society to function as an autonomous body. It will have the best of facilities needed for advanced research in atomic physics, nuclear chemistry. It will be a centre par excellence.

The Inter-University Centre for Astrophysics at Pune would be in collaboration with the Giant Metre Wavelength Radio Telescope (GMRT) project to be set up by the Tata Institute of Fundamental Research (TIFR). The facility will give opportunity to students throughout the country to experiment on several aspects of astrophysics, The location of the GMRT centre within a university campus would be mutually beneficial.

Researchers and students from different universities will work together in the inter-university centres which will emerge as a storehouse of knowledge.

Bombay University Plans New Centres

The University of Bombay proposes to launch various new schemes. The postgraduate schemes include a school for foreign and Indian languages, a department of research and training in Ayurvedic medicine, a centre for fine arts and a media centre.

The proposed Ayurvedic department seeks to establish a herbarium for the identification of plants. The centre for advanced studies in arts, sculpture and painting would provide post-graduation facility for "candidates of promise" and facilitate exchange programmes between artistes of various countries. The media centre would expand the directorate of distance education into open exchange facility, set up an academic staff college, a women's polytechnic and develop communication technology.

The University also seeks to set up a postgraduate centre for the Konkan area which would emphasise the relevance of an applied components group addressing itself to natural resources and local needs.

Biological Rhythms in Man

The School of Biological Sciences of the Madurai Kamaraj University is reported to be conducting an experiment on human circadian rhythms. The university's animal behaviour department has built a 'human isolation facility' to study biological rhythms in man. Only the sixth such facility in the world, it was commissioned late last year with a volunteer scientist staying in isolation in the 'room without windows' for three weeks. Given no societal cues to time, his sense of time was measured using sophisticated equipment like a 'solicorder', which measures room temperature and wrist movement (locomotion), and an 'event recorder', which notes down all activities the room's occupant engages in by a push button method.

The animal physiology department is working on sericulture to improve the quantity and quality of silk output. Researchers have optmised the food requirements and feeding schedules of larvae of silkworm for optimum silk production. The results show a significant increase in the economic characteristics of silkworms such as larval, silk gland and cocoon weights and cocoon shell ratio.

The school also has a unit under it, the newly set up centre for biology education, recognised by the UGC as a National Centre for Science Education. The centre's plans include starting a bioinformation centre to improve science education, evolving a national level item evaluation centre with access to all universities, publishing books and laboratory manuals for students' use and formulating computer aided instruction in biology.

UGC Team Visits Bhopal Varsity

The U.G.C. Expert Committee on mid-term appraisal of VII Plan visited the Bhopal University recently. The Committee reviewed the implementation of VII Plan of the Universty in respect of teaching programme, research, buildings and the different components of the New Education Policy. It also visited three colleges and reviewed the implementation of new education policy in terms of restructuring of courses and infrastructural facilities available in the colleges.

Augmenting Research Facilities at TIET

Under its 'Institution Network Scheme' the Union Government has provided a sum of Rs. 5 lacs for the consolidation of Material Science Laboratory at the Thapar Institute of Engineering and Technology (TIET), Patiala. This work will be undertaken with the help of IIT, Delhi.

A Laser and Fiber Optics Laboratory will be set up in the Institute in the Applied Sciences Department, for which Rs. 5.5. lacs have been sanctioned under the Plan Scheme of Government of India. These Laboratories will further enhance the Research potential at the Institute.

Evaluating Technical Institutions

The Union Government proposes to set up, through the All-India Council for Technical Education, a National Board of Accreditation to periodically conduct evaluation of technical institutions and their programmes on the basis of norms and standards specified by it. The purpose of accreditation will be to identify those institutions and professional programmes in engineering and technology which are worthy of recognition in the professional engineering context. It will also recommend recognition and de-recognition of the institutions.

The proposed board shall comprise persons and groups interested in maintaining the standards of technical education. The board may consist of 25 members. It shall be funded by the Government. The findings of the board will be communicated to the institutions and a list of the accredited institutions shall be published.

The council may also take steps to check increasing commercialisation of technical education and prepare suggestions to involve private and voluntary efforts to develop technical education facilities in the country.

MRTPC Restrains Maithili

The Monopolies and Restrictive Trade Practices Commission (MRTPC) has restrained Maithili University, Darbhanga from describing itself as a 'university' or having the word university in its name. It has also restrained the educational body from conferring degrees of B.A., B. Com, M.A., M. Com, and M.B.A.

Passing an ex-parte interim injunction, the Commission has restrained Vijay Tutorials, Puttur, South Kanara also from misleading the students about the 'quality and standard' of degrees of the so-called Maithili University, Darbhanga. The tutorials have been asked not to claim that the degrees awarded by Maithili University were recognised by the Government of India for employment purpose.

The order way passed by the Commission on an application moved by the Director General (Investigation and Registration) who had received a complaint from Consumers Education Trust of Mangalore that Vijay Tutorials, a teaching shop, was misleading the students by issuing letters that they could obtain B.Ed. and other degees of Maithili University, Darbhanga by post/personal coaching. The Vijay Tutorial further misrepresented to the students that B.Ed. degee awarded by Maithili University were recognised by the Government of India for employment purpose.

It may be notified that Maithili University' was neither a university established under the Central Act or a State Act or a deemed university under section three of University Grants Commission Act and that the degrees awarded by it are not recognised.

Modernizing Social Work Syllabi

Students and teachers from Delhi University, Jamia Milia, Department of Social Work of Delhi University and members from other agencies like Plan International, Centre for Community Economics and Development Consultants Society, Indo-German Social Service, United Nations High Commissioner for Refugees, Prerna, are reported to have formed working groups to review the social work curriculum in all the schools of social work to develop models of practice, forms and levels of training, explore new areas of social work practice.

The working groups were formed after two-day deliberations at a consultation on social work practice in India organised recently by the Society for Promotion and Reorganisation of Self Help at the Indian Social Institute in New Delhi.

It was felt at the meeting that, "The 20th century phenomena of professional social work is urban based. The centres of learning are located in the metropolitan cities, therefore the training imparted is also useful in dealing with urban problems. This in itself reflects that the majority of our rural population is practically left uncovered by the professional."

ASSOCIATION OF INDIAN UNIVERSITIES

CORRESPONDENCE COURSE IN EVALUATION METHODOLOGY & EXAMINATIONS

Applications are invited from college/university teachers for admission to Correspondence Courses in Evaluation Methodology and Examinations at Basic Level, Intermediate Level and Advanced Level/Special Professional Course. The duration of each of the three courses is six months. A personal 'Contact Programme' for three days is planned for each of the three courses. Universities/Institutions sponsoring candidates can meet the registration/course fees from out of unassigned grants by UGC.

Request for prospectus and application form accompanied by a crossed Indian Postal Order for Rs. 10/- drawn in favour of the Secretary, Association of Indian Universities and a self addressed stamped envelope (Rs. 2/-) should reach the Director (Research), Association of Indian Universities, AIU House, 16 Kotla Marg, New Delhi 110002. Last date for receipt of applications is **15th September** for non-sponsored and **26th September, 1988** for sponsored candidates.

Research Fellowships Enhanced

The Department of Education in the Ministry of Human Resource Development has announced enhancement of the research fellowships and associateships and the contingent grants for Ph.D. students in the Indian Institutes of Technology and other technical institutions recognized by the All-India Council for Technical Education. The decision is effective April 1, 1987.

For Ph.D. students with B.Tech, B.E., M.Sc or M.A. qualifications the enhanced fellowships will be Rs. 1,800 p.m. for the first two years and Rs. 2,100 p.m. for the remaining three years. The Ph.D. students with Master's degree in Engineering or Technology will now get Rs. 2,400 in the first two years and Rs. 2,500 in the subsequent years.

UGC Team Visits Kurukshetra Varsity

The Department of Physics, Kurukshetra University, in collaboration with the Department of Biology, proposes to establish a new department of Biophysics and Biotechnology. The Department of Earth Science has a proposal to start M. Tech and M.Sc. courses in Applied Geology during the eighth plan of the University. This was revealed by Mr. M.K. Miglani, Vice-Chancellor of the university, during a meeting held recently between an expert committee of the University Grants Commission headed by Prof. P.N. Trehan and a team of Kurukshetra University.

Mr. Miglani said that the Department of Mathematics had been recommended for its inclusion in the intensive aid programme. The department had also been chosen by the Department of Atomic Energy to hold a national level workshop on cohomolgy of groups.

Another Campus for Poona University

The University of Poona is likely to get a 32 hectare piece of land at Moshi Village in the Pimpri-Chinchwad area for its expansion. The Pimpri - Chinchwad Municipal Corporation, which has agreed to hand over the land to the University, is also considering its request to help construct a building on the campus. This was revealed by the Vice-Chancellor Prof. V.G. Bhide.

Prof. Bhide said the Corporation was requested to earmark an additional 80 hectare area in the vicinity for future needs and added that the University wanted to develope the new campus on the pattern of Kalina of the Bombay University. Departments for subjects such as Computers, Electronics, Biotechnology and Sociology would be set up there besides the science and technology park.

Library Information Centre

A Library Information Centre to provide services to the academic community in the country has recently been inaugurated by Prof. S.K. Khanna, Secretary, University Grants Commission, at the SNDT Women's University.

A U.G.C.-sponsored project, the centre aims at improving access to information and provide bibliographic support in the fields of sociology, women's studies, home science, special education, library and information science and Gujarati language and literature. The services of this centre will be available to facuty members, students, research scholars and others involved in teaching, research, extension and communication in colleges and universities throughout the country.

Design for Olympics - 88

Professor B.S. Grewal's postage design has been accepted for publication on the "Seoul Flame", the Newsletter of the Seoul Olympic Organizing Committee.

Professor Grewal, Dean of Students' Welfare, Punjabi University, Patiala is a known Olympic philosopher and his contributions have repeatedly been appreciated by the Olympic Committees since 1968 Mexico Olympics.

New Postgraduate Courses

The Mother Teresa Women's University, Kodaikanal proposes to introduce Postgraduate Courses with a slant on women during the current academic year. The courses are M.A. in Historical Studies, M.A. in Tamil, and M.A. in Women's Studies.

These courses will serve as feeder courses for Research in Women's Studies. The syllabi for the above courses have been formulated by an Expert Committee and approved by the Academic Committee, which met on 16th July, 1988. A project and detailed study of a book in lieu of a paper are the special features of these courses.

Inter-Varsity Debates

The University of Kashmir has drawn up a number of academic and co-curricular programmes for the youth of country to be organised during October/November, 1988 at the National Level. The programmes are (1) Inter-University Debate in English for Sheikh Mohammad Abdullah Rolling Trophy; and (2) Inter University Debate in Urdu for Allama Iqbal Rolling Trophy.

Besides attractive trophies, individual cash prizes for the debates sponsored by the Jammu and Kashmir Bank Ltd., Srinagar, will be awarded.

- — 1st prize of Rs. 1000/- plus a certificate
- — 2nd prize of Rs. 750/- plus a certificate
- — 3rd prize of Rs. 500/- plus a certificate
- — Two consolation prizes of Rs. 300/-each plus certificates
- — One consolation prize of Rs. 300/- for the Best Lady Speaker, plus a certificate (if not a prize winner).

Universities are welcome to send a team of two students for each Debate. There is an entry fee of Rs. 25/- for each Debate which is to be paid by the sponsoring University through Bank Draft/Postal Order in the name of the Dean, Students Welfare, Universsty of Kashmir, Srinagar. The last date of receipt of entries is **August 30, 1988**.

Research Methodology on Women's Studies

As part of its staff training project, the Research Centre for Women's Studies (RCWS) of the SNDT Women's University conducted a two-week workshop on Research Methodology on Women's Studies. The workshop discussed the relevance of qualitative methods such as anthropological field work, folk material, oral history, autobiographies etc., as important sources for understanding women's lives. Experts dealt with the basic types of tools used in quantitative methods for analysis of data, including use of computers. The emphasis at the workshop was on a problem solving approach and the resource persons made the participants reflect, react and respond. A research manual was also prepared and distributed to participants as background papers.

Prominent among those who participated as resource persons were Dr. Victor D'Souza, Dr. Nirmala Banerjee, Dr. Swapna Mukhopadhyaya, Dr. Purnima Mane, Dr. C.S. Laxmi, Dr. Neera Desai and Dr. Maithreyi Krishnaraj.

Certificate Course in Food and Nutrition

The Andhra Pradesh Open University (APOU) proposes to introduce a Certificate Course in Food Nutrition in Telugu. The course developed by Indira Gandhi National Open University is being adopted by the APOU. Disclosing this Dr, C. Narayana Reddy, Vice-Chancellor, A.P. Open University, said that notification will be issued shortly calling applications for this course. Dr Narayana Reddy also said that a total of 5 Study Centres (2 in Twin Cities of Hyderabad and Secunderabad, and one each in Tirupati, Visakhapatnam and Warangal) will be started for this course. The duration of this course will be six months. This is an awareness course and does not require any formal qualifications. The course will be particularly useful to those who are working in Anganwadies, Balwadies, Voluntary Organisations, etc.

Central Assistance for Anna Varsity

The Ministry of Human Resource Development of the Government of India, have sanctioned a sum of Rs. 35.00 lakhs to Anna University for meeting the recurring and non-recurring expenditure for the following schemes under the area of emerging technology and area of critical needs.

Rs. 25.00 lakh for strengthening Infrastructure in Remote Sensing Sub-Centre for advanced level Research and development activities and for training manpower.

Rs. 10.00 lakh for expansion of facilities in Electronics Instrumentation Laboratory.

NLC Supports Degree Course in Mining Engineering

The Neyveli Lignite Corporation Limited, one of the industries approached for financial assistance, has sanctioned a sum of Rs. 25.00 lakhs to Anna University for strengthening the B.E. degree course in Mining Engineering.

The Course with an intake of 30 had been started by the University from the year 1987-88.

We Congratulate . . .

Prof. Mohit Bhattacharjee who has been appointed Vice-Chancellor of the University of Burdwan, Burdwan.

News from Agril. Varsities

New Courses at HAU

Haryana Agricultural University (HAU) proposes to introduce four postgraduate and two undergraduate courses from the current academic session.

These courses are M.Sc. in clothing and textiles, child development, family resources management and seed technology, B.Sc. in agriculture (six-year-programme) and B.Sc. in home science (five-year-programme).

New Hybrid Coconut Variety

The Kerala Agricultural University has developed 'Laksha Ganga', the first coconut hybrid variety. This new variety is a cross between the dwarf Andhra Pradesh variety 'Ganga bondam' and tall Lakshadweep ordinary using the former as male parent and latter as (10XGB) female. Laksha Ganga has out yielded all other coconut hybrids and its parents in nut production, copra out turn and oil production.

Laksha Ganga, the tall hybrid which starts flowering at the age of five years produces an average yield of 108 nuts per annum per year. The highest recorded nut production per annum is 236 per palm. Mean weight of nut is 677 gm and mean weight of husked nut is 380 gm. This variety is also capable of producing an average yield of 3749 kg., of copra per hectare. The mean weight of copra per nut is 195 gm. and mean copra yield per palm per year is 21 kg.

This new hybrid variety can be successfully cultivated under rainfed condition in Kerala. However, no particular emphasis can be laid on the pest and diseases tolerance. Its economic attributes could be best utilised for increasing coconut production in the state.

Stress on Women Education

"Despite the gains of green revolution, the quality of life in the villages had not improved and the women folk in particular had to suffer because of improper toilet facilities and smoky kitchens in the rural homes", said Dr. G.S. Gill, Additional Director of Extension Education of the Punjab Agricultural University while presiding over the concluding function of a five-day training course on better home-keeping for the rural women at Nangal in Jalandhar district. Dr. Gill urged that the women should be given proper education about nutrition, child care and home-keeping since they had equally contributed to the development of Punjab.

Dr. (Mrs) S. Roy, Head of the Department of Home Science Education & Extension of the PAU explained that the training course was organized in collaboration with the local branch of the Canara Bank which had spent about Rs. 5 lakhs for the overall development of this village. The trainees which numbered 90 were educated about the nutritious diet, preparation of different recipes, care of children, family health, making decoration articles from waste materials and use of modern kitchen appliances and smokeless chullahs.

News from UGC

INSAT-1B Programme of UGC

Between 11th August to 31st August, 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

11.8.88

"Deccan Traps—Archives of Ancient Volcanism"
"Giants of the Mico-world"
"Computer Quiz"

12.8.88

"Vikram—The Visionary"
"Transformation and Matrices"
"Drug Menace—III"

13.8.88

"Design and Environment—II Timeless Forms for Living Functions"
"Nuclear Application : Nuclear Art France"
"Natural Processes in Language Acquisition—I"

14.8.88

No telecast.

15.8.88

SPECIAL PROGRAMMES
(To be announced later)

16.8.88

"Teleteach—X"
"New Ways for Steel"
"Red Eye"

17.8.88

"City that Jaisal Built"
"The Vertebrate Kidney"
"Energy for All"

18.8.88

"Astronomy Through the Ages—I"
"Food From the Sea"
"Computer Application"

19.8.88

"Dilation in Skew Direction"
"Drug Menace—IV"
"Murmur in the Brook"

20.8.88

"Design and Environment—III The Language of Culture"
"Natural Processes in Language Acquisition—II"
"Mail—I"

21.8.88

No telecast

22.8.88

"Television Classroom—Scaler, Vector and Tensor"
"Raw Materials—Soya Beans"
"Graduate Kisan"

23.8.88

"Shapes of Molecues"
"Teleteach—XI"
"Fractures—I"

24.8.88

No telecast

25.8.88

"Introduction to Microcomputers"
"The Pond"
"Astronomy through the Ages—II"

26.8.88

"Modelling Stock Control"
"Of course I have Problems"
"Hanuman Languages of Rajasthan"

27.8.88

"Design and Environment—IV Forms for Communication"
"Language Planning"
"Mail—II"

28.8.88

No telecast

29.8.88

"Listening to Molecules—Photoacoustic Readings"
"Raw Materials—Coal"
"The End of Pounding"

30.8.88

"Teleteach—XII"
"Fractures—II"
"Proteins : Chemical Structure"

31.8 88

"Digestion"
"The Quick Brown Fox Jumps Over A Lazy Dog"
"University Round Up"

Attention Scientists and Technologists

Indian Expertise in Science and Technology

The Research Cell in Economics of Education of the Association of Indian Universities is conducting a survey of Indian expertise in science and technology in the University sector. It is proposed to prepare a comprehensive database of the skills, knowledge and facilities of the university level institutions as well as a directory of experts in various disciplines of science and technology. The survey is also intended to catalogue the expertise and current research work of Indian scientists and technologists in various fields of science and technology, and will be used as an input for the compilation of a comprehensive database on the scientific and technical manpower in the country. The database will provide a ready reference to the industry, commerce and allied sectors of Indian economy for identifying experts in the relevant fields.

The scientists and technologists engaged in teaching and research in the universities and university level research institutions in India **at the lecturer or equivalent and above levels only** are requested to fill-up the prescribed form, which can be had from the undersigned. The completed form should be returned latest by **September 30, 1988.**

The responses from the academic and research staff are solicited, and their cooperation would be highly appreciated in our venture to build up a comprehensive database.

For the prescribed form, kindly write to :

M M Ansari
Joint Director
Research Cell, Economics of Education
Association of Indian Universities
AIU House, 16 Kotla Marg
NEW DELHI 110 002

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

CURRENT DOCUMENTATION IN EDUCATION

A List of Select Articles culled from periodicals received in the AIU Library during July, 1988

EDUCATIONAL PHILOSOPHY

Kliever, Lonnie D. Religion and academic freedom: Issues of faith and reason. *Academe* 74(2), 1988, 8-11.

Partington, Geoffrey. The concept of progress in Marxist educational theories. *Comp Edn* 24(1), 1988, 75-89.

EDUCATIONAL PSYCHOLOGY

Bartling, Carl A. Longitudinal changes in the study habits of successful college students. *Ednl and Psy Measurement* 48(2), 1988, 527-35.

Gliessman, David H. and others. Variables influencing the acquistion of a generic teaching skill. *Rev Ednl Res* 58(1), 1988, 25-46.

Heausler, Nancy L and Thompson, Bruce. Structure of the torrance tests of creative thinking. *Ednl and Psy Measurement* 41(2), 1988, 463-8.

Hembree, Ray. Correlates, causes, effects and treatment of test anxiety. *Rev Ednl Res* 58(1), 1988, 47-78.

Pitner, Nancy, J. Leadership substitutes: Their factorial validity in educational organizations. *Ednl and Psy Measurement* 48(2), 1988, 307-15.

EDUCATIONAL SOCIOLOGY

Hearn, James C. Attendance at higher cost colleges: Ascribed, socio-economic and academic influences on student enrolment patterns. *Eco Edn Rev* 7(1), 1988, 65-76.

Sinha, C.S.P. National and regional identities in India: Historical perspective. *J Indian Edn* 13(5), 1988, 42-6.

EDUCATIONAL PLANNING

Bjorklund, Anders. What experiments are needed for manpower policy? *J Human Resources* 23(2), 1988, 267-77.

EDUCATIONAL ADMINISTRATION

Bradley, Michael G and Graham, John W. Education and asset composition. *Eco Edn Rev* 7(2), 1988, 209-20.

CURRICULUM

Vaideanu, George. Interdisciplinarity in education: A tentative synthesis. *Prospects* 17(4), 1987, 489-501.

TEACHERS & TEACHING

Amrik Singh. The teachers' strike and after: Emerging trends and issues. *Eco and Pol Weekly* 23(29), 1988, 1484-96.

Menges, Robert J and others. Strengthening professional development: Lessons from the Program for Faculty Renewal at Stanford. *J Hr Edn* 59(3), 1988, 291-304.

EDUCATIONAL TECHNOLOGY

Datta, Kamal. Computer education in Indian secondary schools: A survey of CLASS. *Prospects* 17(4), 1987, 581-6.

Dieuzeide, Henri. Computers and education : The French experience. *Prospects* 17(4), 1987, 531-7.

Makau, Benjamin M. and Wray, Brian. Microcomputers in education : A Kenyan experience. *Prospects*, 17(4), 1987, 571-9.

EDUCATIONAL EVALUATION

Albanese, Mark A and Sabers, Darrell L. Multiple true-false items : A study of interitem correlations, scoring alternatives, and reliability estimation. *J Ednl Measurement* 25(2), 1988, 111-23.

Kolen, Michael J. Defining score scales in relation to measurement error. *J Ednl Measurement* 25(2), 1988, 97-110.

Watkins, David and Afzulpurkar, Nitin, Class size and student ratings of tertiary courses. *Ednl and Psy Measurement* 48(2), 1988, 523-6.

Wilcox, Rand R. and Wilcox, Karen Thompson. Models of decision making processes for multiple-choice test items : An analysis of spatial ability. *J Ednl Measurement* 25(2), 1988, 125-36.

ECONOMICS OF EDUCATION

Baum, Sandra R. and Schwartz, Saul. Merit aid to college students. *Eco Edn Rev* 7(1), 1988, 127-34.

Hartog, Joop and Oosterbeek, Hessel. Education, allocation and earnings in the Netherlands : Overschooling. *Eco Edn Rev* 7(2), 1988, 185-94.

Huang, Wei-Chiao. An empirical analysis of foreign student brain drain to the United States. *Eco Edn Rev* 7(2), 1988, 231-43.

James, Estelle. Student aid and college attendance : Where are we now and where do we go from here ? *Eco Edn Rev* 7(1), 1988, 1-13.

Kim, H. Youn. The consumer demand for education. *J Human Resources* 23(2), 1988, 173-92.

Lawma, T. Earning-occupation-education inter-relations : A case study of North-East India. *Manpower J* 22(1), 1986. 1-28.

McMahon, Walter W. Potential resource recovery in higher education in the developing countries and the parents' expected contribution. *Eco Edn Rev* 7(1), 1988, 135-52.

Prais, S. J. Two approaches to the economics of education : A methodological note. *Eco Edn Rev* 7(2), 1988, 257-60.

Ruhm, Christopher J. When 'Equal opportunity' is not enough : Training costs and intergenerational inequality. *J Human Resources* 23(2), 1988, 155-72.

Stampen, Jacob O. and Cabrera, Alberto F. The targeting and packaging of student aid and its effect on attrition. *Eco Edn Rev* 7(1), 1988, 29-46.

Tachibanaki, Toshiaki. Education, occupation, hierarchy and earnings. *Eco Edn Rev* 7(2), 1988, 221-9.

Williams, Gareth. The debate about funding mechanisms. *Oxford Rev Edn* 14(1) 1988, 59-68.

Woodhall, Maureen, Designing a student loan programme for a developing country : The relevance of international experience. *Eco Edn Rev* 7(1), 1988, 153-62.

COMPARATIVE AND COUNTRY STUDIES

Moser, Claus. The Robbins Report 25 years after—and the future of the universities. *Oxford Rev Edn* 14(1), 1988, 5-20.

Neave, Guy. From a farflung field : Some considerations of Robbins from a European perspective. *Oxford Rev Edn* 14(1), 1988, 69-80.

Richter, Ingo. Selection and reform in higher education in Western Europe. *Comp Edn* 24(1), 1988, 53-60.

Scott, Peter. Blueprint or blue remembered hills ? The relevance of the Robbins report to the present reforms of higher education. *Oxford Rev Edn* 14(1), 1988, 33-48.

Simmons, Cyril and Wade, Winnie. Contrasting attitudes to education in England and Japan. *Ednl Res* 30(2), 1988, 146-52.

Trow, Martin. Comparative perspectives on higher education policy in the UK and the US (1). *Oxford Rev Edn* 14(1), 1988, 81-96.

THESES OF THE MONTH

A List of Doctoral Theses accepted by Indian Universities.

BIOLOGICAL SCIENCES

Biochemistry

1. Abraham, Annie. *Studies on cholesterol metabolism.* Kerala. Dr. P.A. Kurup, Prof and Head (Retd), Department of Biochemistry, University of Kerala, Trivandrum.
2. Basu, Subirkumar. *Biochemical studies on some aspects of mycobacteria.* Calcutta.
3. Bulusu, Saraswati. *A study on the toxicity of some pesticides under various nutritional conditions.* Calcutta.
4. Moses, Lavanya. *Calcium activated neutral protease in the blood cells of Duchanne muscular dystrophy : Its role in pathogenesis.* Osmania.
5. Pandey, Ram Awatar. *Biological stabilization of coal carbonization wastes.* Nagpur. Dr. P. Kumaran, Scientist, NEERI, Nagpur and Dr. N. M. Parhad, Department of Biochemistry, Nagpur University, Nagpur.
6. Paramjit Kaur. *Biochemical and physiological effects of feeding peroxidized oils in albino rats.* PAU.
7. Remala, Narayana Murty. *The mitogenic trigger : Role of calcium and calmodulin.* JNU. Prof. A. R. Rao.
8. Singh, Ashok Kumar. *Elucidation of actomyosin interaction on the basis of H-flux mediated electro osmosis.* JNU. Prof. M. Amin.

Microbiology

1. Dudhane, Sunil Bapuraooji. *Microbial degradation of limonin.* Nagpur. Dr. K.V. Shankhpal, Department of

iochemistry and Microbiology, Nagpur University, Nagpur.

Marine Biology

1. Nair, Mini. *Studies on the systematics and ecology of isopods of the* [*South West Coast of India.* Kerala. Dr. H. Suryanarayanan, Reader, Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

2. Prabhudeva, K.N. *Toxicity accumulation and depuration of heavy metals in the Brown Mussel Perna Indica.* Cochin. Dr. N. Ravindranatha Menon, School of Marine Sciences, Cochin University of Science and Technology, Cochin.

Botany

1. Anil Kumar. *Studies on ecological implications of varied land use patterns in North Eastern Hill Region of India.* NEHU. Prof. P. S. Ramakrishnan, Department of Ecology. Jawaharlal Nehru University, New Delhi.

2. Deshmukh, Ramdas Gomaji. *Embryological and histochemical studies in the combretaceae.* Nagpur. Dr. K.H. Malde, Department of Botany, Nagpur University, Nagpur.

3. Dixit, Anupam. *Genetic regulation of heterocyst differentiation and nitrogen fixation in Cynabacteria, Blue Green Algae.* Avadh. Dr. P.N. Saxena, Algae Laboratory, National Botanical Research Institute, Lucknow.

4. Dixit, Arun Mani. *Studies on ecology and production of wetlands and lakes of Tarai region of North-Eastern U.P. with emphasis on their management.* Awadh. Dr. Lalman, Department of Botany, M.L.K. College, Balrampur.

5. Gupta, Swati. *Morphology, aerobiology, physiology and Chemistry of the pollen grains of some sub-tropical eastern Himalayan plants.* Calcutta.

6. Leelavathi, Sadhu. *Androgenic plant production in Brassica Spp. to evolve genetic recombinants.* Calcutta.

7. Lugade, Manikrao Raghunath. *Cytological and physiological studies in colchicine yielding plants Gloriosa L. and Iphigenia kunth.* Shivaji. Dr. B.A. Hegde, Prof. and Head, Department of Botany, Shivaji University, Kolhapur.

8. Merajuddin, Mukashaf Sitara Md. *Cytogenetical studies in some species of paspalum.* Karnatak. Dr. M.S. Chennaveeraiah, Prof. (Retd) Department of Botany, Karnatak University, Dharwad.

9. Pal, Aparna. *On the pollen morphology of some members of Indian asteracea with reference to taxonomy and affinity.* Calcutta.

10. Ray, Namita. *Micromorphological studies of fruits of some members of Indian umbelliferae.* Calcutta.

11. Sakundarwar, Ravindra Shankarrao. *Investigation of plant remains from the Deccan intertrappean exposures of India.* Nagpur, Dr. N.R. Yawale, Department of Botany, Institute of Science, Nagpur.

12. Sarkar, Subhasish. *Chromosome banding technique in plant cytogenetics.* Calcutta.

13. Siva Reddy, Vanga. *Use of androgenic plant production techniques in evolving novel genetic variants in rice, Oryza sativa L.* Calcutta.

14. Tewari, Subhash Chandra. *Studies on microbial communities and their activities in soils of pineapple plantations.* NEHU. Prof. R.R. Mishra and Prof. B.K. Tewari Department of Botany, North Eastern Hill University, Shillong.

15. Thakarar, N.K. *Biological flora of Rajkot.* Saurashtra. Dr. S.C. Pandeya, Prof., Department of Biosciences, Saurashtra University, Rajkot.

16. Thakkar, Rajesh Kumar. *Studies on some seed borne infections of barley, Hordeum vulgare L. grown in Rajasthan.* Rajasthan. Dr. Dalbir Singh, Prof., Department of Botany, University of Rajasthan, Jaipur.

17. Thombre, Ramesh Rajaram. *Studies in physiology of leaf ontogeny in plants.* Shivaji. Dr. B.A. Karadge, Department of Botany, Shivaji University, Kolhapur.

Zoology

1. Desai, Dadasaheb Babasaheb. *Studies on the lipase activity in mice tissues in experimental uranyl nitrate intoxication.* Shivaji. Dr. V.A. Sawant, Department of Zoology, Shivaji University, Kolhapur.

2. Maitra, Debasri. *Histology and histochemistry of the blood and digestive tract of certain simuliids and culicids : Diptera.* NBU.

3. Mohammad Ishak. *Studies on experimental ascardiasis relation of the bursa and other lymphoid organs to ascaridia gall infection in chicken.* Vikram. Dr. G.N. Johri, Head, Department of Biology, Vikram University, Ujjain.

4. Nanchal, Brijesh Kumari. *Study on neurosecretory system of hieroglyphus furcifer (Orthoptera : Acrididae).* Rajasthan. Dr. B.N. Mathur, Department of Zoology, Govt. College, Ajmer.

5. Nigam, Kumud. *Studies on the effects of certain toxicants on common house sparrow, Passer domesticus.* Rajasthan. Dr. P. P. Bakre, Department of Zoology, University of Rajasthan, Jaipur.

6. Pramanik, Debakiranjan. *Studies on Aphid-Aphidiid complex of Nagaland.* Calcutta.

7. Rai, Manoj Madhaw. *In vivo investigations of Nosema locustea-microsporide protozoa for the control of locust locusta, Migratoria migratorioides and grasshopper, Hierogulyphus banian-Orthoptera.* Nagpur. Dr. S.K. Raina, Department of Zoology, Nagpur University, Nagpur.

8. Raman, K. *Some aspects of population ecology, mating behaviour and reproductive strategies of Paratelphusa hydrodromous Herbst.* Kalicut. Dr. K.J. Joseph, Prof. and Head, Department of Zoology, University of Calicut, Calicut.

9. Sen, Mitra. *Study of the biology of female reproduction in solf shelled turtle, Lissemys punctata.* Calcutta.

10. Sreenarayanan, K.V. *Some aspects of the biochemistry and physiology and reproduction in the shore crab, Ocypoda ceratophthalma (Pallas).* Calicut. Dr. K.J. Joseph, Prof. and Head, Department of Zoology, University of Calicut, Calicut.

11. Srivastava, Satish Kumar. *Implication of Calcium in Cataract formation.* Avadh. Dr. V.K. Srivastava, Department of Chemistry, Gorakhpur University, Gorakhpur.

Agriculture

1. Ananda, K.S. *Genetic variability for resistance to saline and alkali soils in some wheat and barley materials.* Kurukshetra.

2. Bhardwaj, Nathu Ram. *Studies on nitrogen requirement and planting geometry of maize based grain legume inter-cropping systems.* HP Krishi. Dr. O.P. Awasthi, Department of Agronomy and Agrometeorology, Himachal Pradesh Krishi Vishwavidyalaya, Palampur.

3. Gurdit Singh. *Studies on the effects of rates and methods of FYM application and seed rates on late sown rainfed wheat, Triticum aestivum. L.* HP Krishi. Dr. R.C. Thakur, Department of Agronomy and Agrometeorology, Himachal Pradesh Krishi Vishwavidyalaya, Palampur.

4. Krishan Chander. *Bionomics of some aphidephagous syrphid species of subtemperate region.* YS Parmar. Dr. O.P. Bhalla, Department of Entomology and Apiculture, College of Horticulture, Solan.

5. Rade, Vasant Marutrao. *A study of small farmers in Bhor Tehsil of Pune District with special reference to communication of agricultural information and adoption of agricultural innovations.* MP Agrl, Dr. P.V. Salvi, Vice-Chancellor, Marathwada Agricultural University, Parbhani.

6. Sarwan Kumar. *Studies on the effects of amendments and saline irrigation water on the reclamation of sodic soil.* Kurukshetra.

7. Sharma, Prem Nath. *Identification of viruses causing mosaic diseases in bell peppar, Capsicum annum L. in Himachal Pradesh.* YS Parmar. Dr. S.C. Chowfla, Department of Mycology and Plant Pathology, College of Horticulture, Solan.

8. Taneja, Narendra Kumar. *Studies on myrothecium leaf spot disease of cotton.* YS Parmar. Dr. P.K. Seth, Head, Department of Mycology and Plant Pathology, College of Horticulture, Solan.

9. Thimmappa, Guruswamy. *Traction studies under alluvial soil conditions of Punjab.* PAU.

10. Yadvinder Singh. *Studies on the fungal blight of sesame, Sesamum indicum L in the Punjab.* PAU.

Medical Sciences

1. Datta, Suchimita. *A study on the resistance pattern of a chromate tolerant bacterium.* Calcutta.

2. Hemavathi, R. *Purification and characterisation of ribonuclease from human milk.* Osmania.

3. Kaskhedikar, Satish Gopalrao. *Synthesis and structure activity relationships on potential biological active compounds.* Nagpur. Dr. G. Bagavant, Department of Pharmaceutical Sciences, Nagpur University, Nagpur.

4. Lakshmi, V.V. *Screening of some plant derived and synthetic compounds for inhibition of penicillinase and curing of plasmids in Escherichia coli.* Osmania.

5. Nagaraja Rao, Kamala Puram. *Leprosy—it's association with nutritional factors and few co-existing tropical infections.* Nagpur. Prof. Kunal Saha, Division of Immunology, V.P. Chest Institute, University of Delhi.

6. Palchaudhuri, Madhusnata. *Changes in interphase nucleus in cancer.* Calcutta.

7. Parui, Rabindranath. *Cerebellar participation in glucose homeostasis.* Calcutta.

8. Pathaki, Vandana, K. *Studies on dominant lethality and the immune status of mice inoculated with inactivated and live influenza X31 virus.* Osmania.

9. Ramaprasad. P. *Studies on filarial excretory and secretory antigens.* Nagpur. Dr. B.C. Harinath, M.G.I.M.S., Sewagram.

10. Saxena, Sunilkumar Ramashankerlal. *Cultivation and immunological studies in malaria.* Nagpur. Dr. G.P. Dutta, Director, Division of Microbiology, Central Drug Research Institute, Lucknow.

11. Umathe, Sudhir Kumar. *Biopharmacological studies of some animal species intoxicated with diptheria toxin.* Nagpur. Dr. D.M. Brahmakar, Department of Pharmaceutical Sciences, Nagpur University, Nagpur.

Veterinary Science

1. Dalip Lal. *Scanning alternate sources of calcium and phosphorus supplements and their availability and disappearance from rumen.* Kurukshetra.

2. Dharmpal Singh. *A comparison of some sampling procedues for progeny testing for dairy bulls.* PAU.

3. Gajbhiye, Prakash Uttamrao. *Evolving restricted indices for selection in buffaloes.* Kurukshetra.

4. Ghosh, Bikash Chandra. *Production, packaging and preservation of mozzarella cheese from buffalo milk using microbial rennet.* Kurukshetra.

5. Gulshan Kumar. *Correction factors for progeny testing of bulls having crossbred progeny.* Kurukshetra.

6. Gupta, Neelam. *Purification aad properties of ribonuclease from buffalo and goat milk.* Kurukshetra.

7 Naqvi, Syed Mohammed Khursheed. *Physiological adaptation of sheep during energy crisis and thermal stress.* Kuruskhetra.

8. Sangawan, Ram Bhagat. *Physico-chemical studies on buffalo colostrum caseins.* Kurukshetra.

9. Sat, Le Minh. *Cytogenetic analysis of buffalo chromosomes.* Kurukshetra.

10. Seth, Raman, *Studies on the physico chemical aspects of fat globule membrane proteins of recombined buffalo milk.* Kurukshetra.

11. Sharma, Ashwani. *Studies on the cytological mutagenic and teratological effects of aflatoxins in animals.* Kurukshetra.

12. Singh, Ganga Prasad. *Studies on the effect of chemical treatment of rice husk on the chemical composition, growth and nutrition utilization in cattle.* Kurukshetra.

13. Solanky, Mukesh Jagubhai. *Certain developmental aspects of UHT processing of buffalo milk.* Kurukshetra.

14. Sujata. *Thermal physiology of buffalo neonate.* Kurukshetra.

EDUCATION NEWS INDEX

A List of Select Articles and Editorials on Education from Newspapers received in the AIU Library during July, 1988.

EDUCATIONAL SOCIOLOGY

Amrik Singh. "Empowerment" of women. *The Tribune*, 3 July '88.

Anzar, Qamar Jahan. The many sides of minority insti-utions. *The Hindu* 19 July, 1988.

Jain, S.P. Backward classes : Problems of education. *The imes of India*. 13 July, 1988.

Ramakrishnan, Jaishri. Social integration of the slow earner. *The Hindu* 26 July, 1988.

Singh, Suman. Need to define women's education. *The ioneer* 6 July, 1988.

Sinha, Shashi Shekhar. Social environment and education ystem. *The Indian Nation* 10th July, 1988.

EDUCATIONAL POLICY & PLANNING

Sinha, L.S. Navodaya Vidyalayas : Wanted an alternative approach. *The Hindu* 5th July, 1988.

THE IDEA OF A UNIVERSITY (Ed.) *The Hindu* 8 July, 1988.

EDUCATIONAL ADMINISTRATION

Ambirajan, S. Whither higher education. *The Hindu*, 12 July & 13 July, 1988. (T.R. Venkatarama Sastri Memorial Lecture).

Jain, Sandhya. Autonomy for colleges : New power struggle on the campus. *The Hindustan Times*, 24 July, 1988.

Onkar Singh. University autonomy and accountability. *Patriot*, 16 July, 88.

Sadasivan, S N. Clerical power over academics. *National Herald*, 15 July, 1988.

Upadhyay, Ashok. Where is ICHR's research output ? *The Economic Times*, 5 July, 1988.

EDUCATION & POLITICS

ACADEMIA IN ELECTIONS (Ed.) *Patriot* 27 July '88.

VC RUNS AMOK (Ed.) *The Indian Nation*, 28 July, 88.

CURRICULUM

MATH & AFTERMATH (Ed.) *The Times of India*, 13 July, 88.

Puri, Rakshat. Two cultures. *The Hindustan Times*, 6 July, 88.

Sarkar, Chanchal. No schools for thought. *Indian Express*, 10th July, 88.

LANGUAGE & LANGUAGE POLICY

Jacob, Kuruvila. The controversial language policy. *The Hindu*, 12 July, '88.

VOCATIONAL EDUCATION

Alexander, P.C. Serious flaws in medical education. *Indian Express*, 4 July. 88.

Ninan, Sevanti. Unprepared again. *Indian Express*, 20 July, 88.

Parameswaran, M.A. Engineering courses : Time to change the statusquo. *The Hindu*. 26 July, 88.

TECHNICAL EDUCATION (Ed.) *The Hindustan Times*, 13 July, 88.

TEACHERS & TEACHING

Banamali Nath. Mehrotra Committee report : An appraisal. *The Assam Tribune*, 9 July, 1988.

Banerjee, Robin. New frontiers for colleges. *National Herald*, 24 July '88.

Jain, Sandhya. Teachers and trade unionism. *The Hindustan Times*, 3 July '88.

Jha, Nalinikant. Strategies for improving teachers' performance. *The Indian Nation*, 4 July '88.

JUSTICE TO TEACHERS (Ed). *The Indian Nation*, 24 July, '88.

MOVE AGAINST UNIONS (Ed). *The Hindustan Times*, 30 July '88.

NEW DEAL FOR TEACHERS (Ed). *National Herald*, 25 July '88.

ON TEACHERS AND PUPILS (Ed). *Patriot*, 10 July '88.

REDRESSAL IN DRIBLETS (Ed). *The Tribune*, 25 July, '88.

Shukla. Shyam N. Teaching profession and UGC grades. *The Pioneer*, 31 July, '88.

TEACHERS' PAY (Ed) *Deccan Herald*, 25 July, '88.

TEACHERS WITHOUT RIGHTS (Ed). *The Tribune*, 30 July, 1988.

EDUCATIONAL RESEARCH

Bell, Gordon C. Striving for a national research network in the U.S. *The Hindu*, 13 July, 1988.

Rajimwale, Anil. Scientific-technological bodies in national growth. *Patriot*, 9 July, '88.

Subramanya, Manju. Lab, industry interface increasing. *The Economic Times*. 10 July, '88.

EDUCATIONAL TECHNOLOGY

Amrik Singh. Education versus entertainment. *Amrita Bazar Patrika*, 13 July, '88.

———. Media imbalance. *The Hindustan Times*, 4 July, '88.

Iyengar, T.K.S. Information as an aid to progress. *The Hindu*, 2 July, '88.

EDUCATIONAL EVALUATION

ANTI-STUDENT ACT (Ed). *The Indian Nation*, 6 July, '88.

Natarajan, K.V. In search of a meaningful evaluation system. *The Hindu*, 5 July, '88.

VARSITY EXAMS. (Ed). *The Indian Nation*, 25 July, '88.

ECONOMICS OF EDUCATION

Gopalakrishnan, A.A. Pursuing higher study under NSS 1987 scheme. *The Hindu*, 22 July, '88.

Gundu Rao, N.C. Have capitation fee really gone ? *Deccan Herald*, 17 July, '88.

PHYSICAL EDUCATION & SPORTS

V. Mohan. How to produce champions. *Indian Express*, 10 July, '88.

ADULT EDUCATION

Banerjee, Argha. Literacy mission launched. *Amrita Bazar Patrika*, 5 July, '88.

Mohanty, B.B. A mission for students. *National Herald*, 22 July, '88.

RURAL EDUCATION

THE DUBIOUS SEARCH FOR NEW RECIPES (Ed). *The Hindu*, 21 July, '88.

RURAL UNIVERSITIES (Ed). *National Herald*, 21 July '88.

INSTITUTIONAL PROFILE

Sadhu, J.N. Cosy bed in seat of learning (Indian Institute of Advanced Studies). *Deccan Herald*, July 31, 1988.

Vedantam, Vatsala. A law school with a difference (National law School of India University, Bangalore). *Deccan Herald*, 16 July, '88.

GUJARAT UNIVERSITY

AHMEDABAD-380009.

Applications are invited in the prescribed form available from the Registrar, Gujarat University, Ahmedabad-380 009 so as to reach him on or before **26-8-88** for the following posts in Rollwala Computer Science Centre.

Sr. No.	Name of Post	No. of Post
1.	Reader in Computer Science	One
2.	Lecturer in Computer Science	One

Minimum Qualifications : For Reader

(1) Ph.D. (Computer Science) with one year's experience or (2) M. Tech. (Computer Science) or M.E. (Computer Science) with three years experience or (3) Lecturer's qualification as prescribed by this University plus two more years experience.

For Lecturer

(1) Ph.D. in Mathematics or Physics or Electronics or Statistics with a good knowledge of Computer OR

(2) M. Tech. (Computer Science) Second Class or M.E. (Computer Science) Second Class or Master in Computer Application (M.C.A.) Second Class or M.Sc. (Computer Science) Second Class OR

(3) Master's Degree with First Class and Post-Graduate Diploma with First Class in Computer Science and Computer Applications. OR

(4) Master's Degree with Second Class and Post-Graduate Diploma in Computer Science and Computer applications in Second Class with one year experience OR

(5) M.B.A. with Specialisation in Computer and Operation Research Techniques.

Pay Scales

Reader : Rs. 1200-50-1300-60-1600-Assessment-60-1900

Lecturer : Rs. 700-40-1100-50-1300-Assessment-50-1600

The above posts carry Dearness Allowances and other allowances as per the rules of Gujarat University. The benefit of General Provident Fund, Gratuity and Pension will be admissible as per the rules of the University in force from time to time. The Candidates selected for the post of Reader/Lecturer shall have to learn Gujarati Language during the period of probation. The initial gross monthly emoluments on the minimum salary in the scale for Reader and Lecturer, will be approximately Rs. 4157/- and Rs. 2833/- respectively.

Residential quarters for Reader/Lecturer may be provided on request subject to the availability.

The prescribed form of applications can be had on payment of Rs. 5/- payable in advance either in cash or by Postal Order. Money Order will not be accepted.

K.R. Joshi
REGISTRAR

BHARATHIDASAN UNIVERSITY

PALKALAIPERUR,
TIRUCHIRAPALLI-620024

Notification No. 003554/B3/88
Dated : 30.7.88

Applications are invited for the following posts in the Bharathidasan University. Application forms, details of prescribed qualifications and other particulars can be had from the REGISTRAR, BHARATHIDASAN UNIVERSITY, TIRUCHIRAPALLI-620 024, on requisition accompanied by a self-addressed envelope (10" × 4") stamped to the value of Rs. 2.60.

Professors : in the Scale of Pay of Rs. 1500-60-1800-100-2000-125 / 2-2500 (Pre-revised scale) Department of Botany (1); School of Energy (1)

Readers : in the Scale of Pay of Rs. 1200-50-1300-60-1900 (Pre-revised scale) Department of Tamil (1).

Lecturers : in the Scale of Pay of Rs. 700-40-1100-50-1600 (pre-revised scale); Department of Tamil (3); Department of English (1). School of Energy (3).

Senior Scientific Officers : in the School of Energy (2) in the Scale of Pay of Rs. 1100-50-1600 (pre-revised scale)

Scientific Officers : in the School of Energy (2) in the Scale of Pay of Rs. 700-40-1100-50-1300 (pre-revised scale).

* All scales of pay carry the usual allowances admissible as per rules.

Requisitions for application forms, details of qualifications and other particulars will be entertained upto **18.8.88.**

The last date for receipt of filled-in applications is **05.09.1988.**

The University reserves the right to short-list the applications and also the right to fill or not to fill any or all (of) the above posts.

Prof. T.S. Shanmugasundaram
REGISTRAR

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— do —	Paperback	35.00
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Press Road,
Phone : 63650

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UNIVERSITY OF OXFORD

Rhodes Scholarships India 1989

Applications are invited from Indian nationals for three Scholarships to be awarded under the terms of the Rhodes Trust, Oxford, England, to outstanding Graduates of Indian Universities. The annual value of each Scholarship is £ 4540. The Scholarships tenable for two, and extendable to three years, are specifically for a course of study leading to a degree at the University of Oxford. Candidates must hold a first class honours degree in pure or applied science, humanities, law or medicine, and apart from academic distinction, show evidence of active interest and achievement in extra-curricular activities, including sports. They must be between the ages of 19 and 25 on October 1, 1989. Particulars of the Scholarships Scheme, together with application form, may be obtained by sending self-addressed Re. 1/- stamped envelope (5" x 10") to the Secretary, Rhodes Scholarships (India), St. Stephen's College, Delhi-110007.

CLASSIFIED ADVERTISEMENTS

GURU GHASIDAS UNIVERSITY, BILASPUR M.P.
ITI BARRACKS, KONI, BILASPUR, M.P.

dvertisement No. 4594 Estt/UTD/88 **Dated : 27.7.88**

Applications in the prescribed forms are invited for the following posts in he University Teaching Departments so as to reach the undersigned on or before **ive Sept., 1988.**

S. No.	Departments	Posts
1.	Deptt. of Industrial Relation (Management)	Professor in Management —One Three Lecturers. 1. Tourism. 2. Labour Walfare Industrial Relation. 3. MBA.
2.	Political Science	One Professor.
3.	Deptt. of Forestry, Wild Life & Eco. Development.	One Lecturer.
4.	Deptt. of Social Anthropology & Tribal Development.	One Professor. Two Lecturers. 1. Social Anthropology. (Reserve for SC/ST) 2. Culture.
5.	Language & Tribal Dialects.	One Reader (Linguistics) Two Lecturers. 1. English (Reserve for ST) 2. Hindi
6.	Deptt. of Commerce.	One Professor.
7.	Deptt. of Business Economics.	One Professor. One Lecturer. (Reserve for SC/ST)

(2) PAY SCALES :
(1) Professor — 1500-2500
(2) Reader — 1200-1900
(3) Lecturer — 700-1600
(Likely to be revised)

(3) QUALIFICATION :

A. Essential for all Posts : As Prescribed by the University Grants Commission, New Delhi for the the Post of Prof., Reader & Lecturer.

Desirable : For Professor in Management.

He must have obtained Post Graduate Degree in Business Administration/Management and Teaching and/or Administrative experience of atleast 10 years in the University or in reputed Organisations/Institutions.

For Lecturer in Tourism

He must have obtained Post Graduate Degree in Tourism and Teaching and/or 5 years Administrative Experience of Tourism Management.

For Lecturer in Labour Welfare Industrial Relation

He must have obtained Post Graduate Degree in Welfare & Industrial relation with at least 5 years experience in the field.

For Lecturer in MBA

He must have obtained Post Graduate Degree in the Subject concerned and/or/must have at least 5 years experience in a reputed concern.

For Professor in Political Science

Prefrence shall be given to candidates specialization in or having experience of research and studies in the field of weaker section of society particularly tribals, Harijans and women, and in rural development.

For Lecturer in Forestry, Wild Life & Eco Development.

As per U.G.C. pres cribed qualification with specialization in Environmental studies or practical experience of field of forestry.

For Professor in Social Anthropology & Tribal Development.

He Must have worked in Tribal Development field.

For Lecturer in Social Anthropology

Specialization in Social Anthropology and/or in Culture with at least 5 years experience in the field.

Language and
For Reader in Language and Tribal Dialects

With Specialization in the field of Gond or Santhali etc.

For Lecturer in English

He must have Specialization in Methodology of Teaching English.

For Lecturer in Hindi

He must have Specialization in the field of Tribal Development.

For Professor & Lecturer in Business Economics

Preference shall be given to candidates specialised in or having experience of research and studies in the field of weaker section of society particularly tribals, Harijans and women, and in rural development and/or background of Industrial relation & management.

(4) No. T.A./D.A. will be admissible to the candidate if called for interview. The Selection Committee may consider the case of an eminent/suitable person in absentia.

(5) Applicants who are in the employment Govt./Semi. Govt./Organisation/Educational Institute or of any Govt. Undertaking must send their applications through proper channel but advance copy should reach in time.

(6) Application forms can be obtained from the University Office on payment of Rs. 5/- or by making a written request by post to the Registrar accompanied by a Crossed Postal Order of Rs. 10/- drawn in favour of the Registrar, Guru Ghasidas University, Bilaspur.

(7) For items No. 1, 4, 5, 6 & 7 those candidates who have already applied in responce to advertisements dated 21.1.88 & 28/4 need not apply again.

(8) The University reserves the right not to fill up the posts.

R.C. Parmar
REGISTRAR

PUNJABI UNIVERSITY
PATIALA

Advt. No. 22/Rect/PRO

Applications are invited for the following posts, so as to reach the Deputy Registrar (Establishment) on or before **23 8.1988**.

1. **Professor** : One in the Deptt. of Sri Guru Granth Sahib Studies,

   Specialization : Desirable : (i) Specialization in Sikh Theology.
   (ii) Good knowledge of classical language i.e. Persian and/or Sanskrit.

2. **Readers** : One each in the Deptts. of Social Work, Computer Science & Applications and Directorate of Correspondence Courses in the subject of Commerce.

   Grade : Rs. 3700-125-4950-150-5700 (UGC).

   Specialization for Reader in Commerce

   The candidate should be capable of teaching paper of Economics related to Commerce.

3. **Lecturers** : One each in the Deptts. of Sri Guru Granth Sahib Studies, Punjabi Shabad Jor-Kosh Cell, Regional Centre Bhatinda in the subject of Punjabi, and Directorate of Correspondence Courses in the subjects of Defence Studies-cum History and Hindi.

   Grade : Rs. 2200-75-2800-100-4000 (UGC)

   Specializations

   Sri Guru Granth Sahib Studies :

Visheeh : *Koshkari Te Anukarminka Da Tajurbaa.*
Advashak: *Guru Granth Sahib Di Bantar Te Tarteeb Da Gyan, Adhyapan Ate Khoj Tofarke Nun Tarjeeh Ditee Javegee.*

   Punjubi Shabad Jor-Kosh Cell : Minimum 3 years experience of editing and research in a Govt./Semi Govt. Institution.
   Defence Studies-cum-History : M.A. in History and Defence Studies.

4. **Librarian** : One in the University Library.

   Grade : **Rs. 1500-60-1800-100-2000-125/2-2500 (Unrevised)**

Note :

1. Candidates who had applied for th post of Reader in Computer Scienc and Lecturer in Defence Studies cum-History in response to earlie advertisement need not apply again.
2. The Vice-Chancellor could als place before the Selection Committe names of suitable persons for th post of Professor.
3. It is not obligatory to call for Interview every candidate who possesse the essential qualifications.
4. The number of vacancies ma change.
5. Candidates must possess working knowledge of Punjabi.
6. The Selection Committee might relax the qualifications/experience in exceptional cases.
7. Details of qualifications, specializations etc., will be supplied alongwith the application forms.

APPLICATION FORMS can be obtained from the Head of the University Publication Bureau, on payment of Rs. 5/- at the counter OR by sending IPO for Rs. 5/- in favour of the Registrar, alongwith a self-addressed envelope (25×10 cms.) with postage worth Rs. 5.50, superscribing on it APPLICATION FOR THE POST OF———.

REGISTRAR

ASSOCIATION OF INDIAN UNIVERSITIES

Applications from Indian citizens are invited on plain paper for temporary posts (two) of Research Assistants on a consolidated salary of Rs. 1800/- per month.

Candidates should have first or second class Master's degree in Social Sciences preferably in Economics with at least 2 Years' experience in economic and/or educational research. Candidates having Mathematics/Statistics/Economics at graduate level as optional subject will be preferred.

The applications complete in all respects should reach the Secretary, Association of Indian Universities, 16 Kotla Marg, New Delhi-110 002, within 10 days from the issue of this advertisement.

Canvassing in any form by or on behalf of a candidate will be a disqualification.

INSTITUTE OF ENGINEERING & TECHNOLOGY

SITAPUR ROAD, LUCKNOW-226 020

Advertisement No. 2/88

Applications are invited from citizens of India for the following posts at this nstitute in the prescribed forms obtainable free of charge from the Deputy egistrar of the Institute on request accompained by a self-addressed stamped Rs. 1.80) envelope (25cm×10cm). Persons employed in Govt./Semi Govt. rganisation or educational institutions should apply through proper channel. osts carry allowances and other benefits as approved by U.P. State Government rom time to time. Depending upon qualifications and experience, a higher start nay be given.

. No.	Name of the Post	No. of Post	Scale Rs.	Qualifications & Experience
1.	Workshop Superintendent.	1	Rs. 1250-2050	Graduate in Mechanical Engg. with atleast 7 years professional experience. Desirable : Experience of maintaining workshop/factory.
2.	Medical Officer	1	Rs 850-1720	M B.B S. + 3 years experience (P.G. will be preferred)
3.	Lecturer (Mathematics) (Leave Vacancy) upto 28.2.89 likely to be extended upto May '89.	1	Rs. 700-1600	Consistently good academic record with doctorate in appropriate field of Applied Mathematics. Experience in Engineering institutions will be preferred.
4.	Deputy Librarian	1	Rs. 690-1420	A Bachelor's degree along with a degree in Library Science with two years experience.
5.	Instructors (one each in Civil, Computer Sc., Electrical, Electronics, Mechanical Engg. Deptt.)	5	Rs. 570-1100	First class B.Sc./ Diploma with five years experience in field of workshop and laboratories
6.	Foreman	2	Rs. 570-1100	First class diploma in Mechanical Engineering or equivalent with five years experience in field. of workshop.

Application on prescribed form should reach the Director, Institute of Engineering & Technology, Sitapur Road, Lucknow-226 020 by 5.00 P.M. on **28.8.1983.**

Anil Kumar Saxena
DEPUTY REGISTRAR

MAULANA AZAD COLLEGE OF TECHNOLOGY

BHOPAL

(A Regional Engineering College)
Bhopal (M.P.)

Advt. No. Estt/R/2/7/88

Applications are invited for the following posts in the prescribed forms.

A. Professor Architecture and Chemistry

Scale of Pay : 1500-60-1800-100-2000-125/2-2500 (to be revised)

Age : Not below 35 years.

A(i) Essential Qualifications—Architecture

An eminent scholar with published work of high quality, actively engaged in research. Ten years of experience in teaching/research/professional work. Experience of guiding research.

OR

An outstanding architect with established reputation who has made significant contribution to knowledge.

A(ii) Essential Qualifications—Chemistry

An eminent scholar with published work of high quality, actively engaged in research. Ten years experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Specialisation : In any branch of Chemistry.

B. Asstt. Professor—Civil, Mechanical & Mathematics

Scale of Pay : 1200-50-1300-60-1900-(to be revised)

Age : Not below 30 years.

B(i) Essential Qualifications for Civil & Mechanical Engg.

Good academic record with a Doctor's degree in relevant field. About five years experience of teaching and/or research and development.

Candidates not possessing Ph.D. may be considered, if they have to their credit equivalent research published work or design/development work of a high order either in the institution or in an industry.

OR

In case of persons to be recruited from industry or professional fields, candidate should possess good academic record with recognised professional work of about seven years which should include innovation and/or research and development.

Specialisation

For Civil Engineering : Hydraulics and Fluid Mechanics/Building Science & Technology/Structural Engineering Applied Geology/Transportation Engineering/Surveying.

For Mechanical Engineering : Machine Design/Vibration/Tribology/Head Power / Production / Industrial Engineering/Fracture Mechanics/Operation Research.

B(ii) Essential Qualifications for Mathematics

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(ii) Good academic record with atleast second Class (C in the seven point scale) Master's degree in a relevant subject from an Indian University or an equivalent degree from foreign University.

Having regard to the need for developing inter disciplinary programmes, the degree in (i) and (ii) above may be in Mathematics.

Provided that if the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (ii) above.

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R.C. Pant
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Editor :
SUTINDER SINGH

LIBRARY & DOCUMENTATION UNIT
29 AUG 1988
C.F.T.R.I., MYSORE

PRIVILEGES & RESPONSIBILITIES OF A COLLEGE PRINCIPAL

J.N. Kapur*

A college principal has not to be just the administrative head of a college; he has to be the academic leader of an academic community, where an academic community is one which is excited and thrilled by the academic activities of learning, teaching, scholarship and research.

The leader of such a community has himself to be excited, thrilled and fascinated by the exponential growth of knowledge in all disciplines. In fact his love for knowledge should be so intense that all students, teachers and members of the public who come in contact with him, get inspired to learn from womb to tomb and are filled with a desire to become members of a learning society.

Once a principal has created a truly academic climate in his college, his task of administrating the college should become easy, since an academic climate implies a keen desire on the part of the students to learn as deeply as possible and a strong desire on the part of the teachers to teach as well as possible.

On the other hand, a principal faces an uphill task if his students are unwilling to learn, if his teachers are unenthusiastic about teaching, if members of the public are interested in getting paper degrees for their children and if the politicians are only interested in exploiting his college for their personal gains.

Most principals are today faced with such a situation. What can they do, individually and collectively, to change the situation ? I faced a similar situation when I took over the vice-chancellorship of a relatively young university more than seventeen years ago. My efforts at creating an academic climate may be of some interest to you.

As a first step, I visited all the fifty-five colleges of the University and addressed about sixty thousand students and three thousand teachers within the first three months. I talked of the great revolution in knowledge brought about by the great dedication of students, teachers, researchers, scientists engineers, painters, musicians, social scientists and others. I talked of man landing on the Moon and aiming to go to Mars. I talked of his making bigger and bigger telescopes to penetrate billions of miles into space and of his making electron microscopes to see as small as millionth of a centimeter. I talked of the great powers of the computers and I invited students and teachers to join the great race of excellence and become world leaders in the race. I wanted them to have great academic ambitions and also to have great ambitions in sports and axtracurricular activities. In whatever field they wanted to excel, sky should be the limit for them. I told them that India was great in the past because of its great rishis and maharishis and India would be great again when its teachers become great rishis and its students become like Nachiketas who was ready to sacri-

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**Hony. Visiting Professor, IIT, Delhi and Delhi University.*

fice every thing for the sake of knowledge. The USA, the USSR, Germany and Japan are great today because their scholars are great scholars. I gave them a target for working for fifty-five hours a week and assured a job for everyone who followed this advice regularly.

The second step was to invite some great scholars from other universities to come and speak to teachers and students. These were dedicated scholars of unimpeachable character who were known to be working for 10-12 hours per day. I also invited some missionaries from Rama Krishna Mission and other similar organisations to go round the colleges and help in inspiring students and teachers and in raising their academic morale.

My third step was to organise subject teachers' associations in all major subjects. These were encouraged to hold seminars, symposia and conferences for discussing problems of curricula and of recent dvelopments in individual subjects. Some of these associations started their own journals. There was a healthy rivalry for excellence among these associations and a large number of teachers found a leadership role in these associations. The silent majority of academically motivated teachers who had no role in the teachers associations of the trade union type began to assert themselves and worked unitedly for the academic growth of the University. I myself went to these conferences and symposia and took an active part in their deliberations. I used to prepare hard for each of these conferences and used my big personal library for this purpose. As an example, once I had to address a conference of psychology teachers. I spent a whole night reading the report of ICSSR committee pointing out the weaknesses of present psychology research in India and suggesting new thrust areas for research. Next day when I spoke at the conference, everybody was impressed by my depth of knowledge of psychology. They were even more impressed when I told them of the way I had acquired that knowledge. A vice-chancellor or a principal has to address a number of meetings in all subjects. He should aim to make a fresh set of remarks at every meeting. He can do so if he continues to read and keeps himself abreast of advancing frontiers of knowledge.

I also insisted that students subject associations in every college should be active academically. Whenever a college teacher met me, I asked him how his subject association in his college was doing. In fact very often the teachers would try to get my favours by generating academic activities among their students.

Amother step I took was to insist that there should be perfect fairness in admissions and they had to be made strictly according to university rules. All reservation of seats for vice-chancellor, principal, members of the boards of managements were given up at one stroke. The principals had a hard time in the first year in enforcing strict adherence to impartiality, but from the next year, they had no pressures, once the public became convinced that impartiality principle was being so ruthlessly followed that even the Chancellor's and the Chief Minister's recommendations could be turned down.

I had also to be very strict about appointments of teachers and had to turn down recommendations from very high quarters, but I did not create a single enemy because nobody really minds if you do not accept any recommendation at all. The trouble arises when you yield to even one recommendation. I declared publicly again and again that my job was to find the best teachers for the students of the University wherever I could find them. My job was certainly not to provide jobs for the 'sons of the soil' or for those with influence.

I still insist that the best administrator is one who is one hundred per cent impartial (here ninety-nine per cent would not do). A principal has to train his students in courage, fearlessness, fairplay, justice and truth and he cannot do so if he himself yields to pressures and compromises with his principles. The moment his students and teachers know that the principal can yield to pressures, his moral authority is over.

I had, no doubt, my share of student demonstrations when papers were out of course or when teachers did not teach properly or when politically motivated students became student union leaders. I had however announced it publicly that I would not accept any demand from students or teachers, which tended to lower standards. The students and teachers readily agreed to this condition, but very soon they found that most of their demands tended to violate this condition. However the insistence on standards created an awareness of need for standards. I insisted that a university with low standards is no university and its degrees were worthless. The only way to raise

(Continued on page 7)

A New School of International Studies

M. S. Rajan*

For many years, I have been pointing out the inadequacy in India of study, research and publication on international affairs and foreign countries/regions. Ten years ago, at the Seventh Rajasthan Political Science Conference held on 25th February, 1978, I spoke of the need for the "establishment of a few more University Departments or Schools of International Studies easily accessible to those young men and women who aspire to specialize in International Studies. India's large size, and the principle of federalism itself, do call for a wider and more even distribution of such departments/schools through the length and breadth of the country." The establishment towards the end the year of a Second School of International Studies, by the Pondicherry University, calls for academic notice of a welcome development in university education in the country.

One of the serious lacuna in the Indian university system, and for a country of India's size, has been the very limited provision for teaching, research and publication for international affairs and area studies. At present, there is only a single School of International Studies (at the JNU) and a single University Department of International Relations (at the Jadavpur University, Calcutta). In other universities (and research institutions) there are one or two courses on these subjects, apart from some area study programmes. This is a pitifully small provision in a country of India's vast size and also a poor reflection of the wide range of India's foreign policy and relations.

"This inadequacy of study, research and publication on international affairs and foreign countries has grave implications for public policy, of which there does not seem to be enough appreciation either among intellectuals, the Press or among the Ministries of External Affairs, Defence and Commerce, which are primarily concerned with the formulation and implementation of India's external policy and relations with other members of the Community of Nations. There is very little public discussion, within and without Parliament, of international affairs and India's attitude to, or role in it. What little discussion there is from time to time, is perfunctory and ill-informed. Universities and research institutions care to take little or no initiatives to promote public discussion of current international problems; the Government, especially the Ministry of External Affairs, takes even less interest or initiative to promote such a public discussion (i.e. outside Parliament). Neither academic institutions nor the Government publish or make available, enough documentation to enable informed public discussion of current problems. This is especially true on security and defence matters. Hardly two or three universities have any provision for study and research on security and defence problems; there is not enought of it even in my own School of International Studies." (*Rajasthan Political Science Conference, 1978*) Of course, the situation has improved considerably since I said this ten years ago.

It is true that the University Grants Commission, the Indian Council of Social Science Research, the Indian Institute of Foreign Trade, the Institute of Defence Studies and Analysis, the Indian Society of International Law (and such other institutions) have been promoting, each in its own way, area studies and international affairs. But, all this does not amount to much. What is more, any youngmen/women who have to study these subjects needs must go to Delhi, far away from their places of residence. The provision in these existing institutions has not also expanded over the years (even in the SIS/JNU) commensurate with the increasing numbers of those who are interested in studying these subjects.

In this context, the proposed opening of a second School of International Studies by the newly-established, Central University, the Pondicherry University needs to be commended. As of now, the provision in the University of just nine positions (two Professorships, four Readerships and three Lecturerships), is modest, but good enough to start with. They are limited broadly to International Politics, International Economics, International Law for M.Phil. degrees. No doubt, in course of time, it would expand the scope of studies, especially into area studies, like, Indian Ocean Studies, relations with the EEC countries (including relations with France) and South and South-east Asian Studies. The University is planning

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**Formerly Director of the Indian School of International Studies (now, School of International Studies, Jawaharlal Nehru University). He is presently a Professor Emeritus of the University.*

to build-up library facilities to support all these studies. The University is taking scholars from different traditional disciplines, and on an all-India basis.

There are some additional reasons why the opening of a second School of International Studies needs to be welcomed. For years, there have been few opportunities of career advancement and mobility for scholars in these fields, including the SIS/JNU scholars; the new School ought to meet partly this need. In the absence of adequate opportunities, facilities in these fields in universities and research institutions, those trained in international affairs and area studies were unable to teach or do research in their respective fields of specialization; they drifted into teaching in traditional disciplines, like political science or history. This is a great loss of specialization and expertise in International Affairs and Area Studies.

Secondly, in the absence of these opportunities (and therefore competitiveness) there is a tendency towards smugness among scholars in these fields with their scholarly achievements so far. In the absence of a large number of other scholars specializing in respective fields, there is also no way of comparing the achievements of these scholars with those of other institutions. During the next few years, this lacuna will, hopefully, be removed.

Finally, it is good that the proposed new School is planning to invest heavily in library resources on international affairs, so that, in the coming years, scholars in the South specializing in international affairs need not have to travel all the way to Delhi or Calcutta to complete their research work. □

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K. Srinivasan
DIRECTOR

DISTANCE TEACHING UNIVERSITIES

P. Satyanarayana*

Distance Education ?

Distance education is a generic term. It includes a wide range of teaching-learning strategies. Distance teaching refers to institution's role while distance learning refers to student's role in the process. Distance education, thus, encompasses all the activities of teaching-learning at distance. Distance, in the context of education, means that the student and teacher are separated and not face-to-face. Two-way communication occurs between a learner and teacher despite the fact that they are not face-to-face. How the two-way communication takes place ? It is established by one or more of available media. For this reason we exclude things such as 'programmed learning texts' and 'teach yourself' books from the scope of distance education. Similarly educational broadcast audio visuals and non-broadcast audio-visuals, on their own, are not forms of distance education. However, any of these may be a part of distance education if they are linked with some kind of two-way communication. We see some colleges and schools using radio, television, audio cassettes, video tapes, computers either to support teaching in the classroom or to perform the function of classroom teacher. These technologies are not distance education. Thus, two-way communication is must in any activity of distance education.

The term distance education is a fairly recent one, but the concept it expresses is at least 150 years old. It is a gradually accepted term. It gained formal recognition in 1982 when the four decades old International Council for Correspondence Education changed its name to the International Council for Distance Education. The primary reason why the term distance education has come into being is that the word correspondence education by which distance education was known earlier is felt to be associated exclusively with the printed word, whereas now a days various non-print media supplement the written word in what is now called distance education.

Distance education has been variously defined. There is no single definition acceptable to many. Charles Wedemeyer, Young, Erdos, Michael Moore, Otto Peters, Borje Holmberg, John Baath, Hilary Perraton and Desmond Keegan greatly contributed towards developing and defining distance education. In general the term distance education "covers the various forms of study at all levels which are not under the continuous, immediate supervision of tutors present with their students in lecture rooms or on the same premises, but which, neverheless benefit from the planning, guidance and tuition of a tutorial organisation." Desmond Keegan has given a comprehensive general definition, which is a synthesis of most of the definitions. Keegan identifies seven principal characteristics of distance education : (1) the separation of teacher and student, (2) the influence of an educational organization, (3) the use of technical media, (4) the provision of two-way communication, (5) the absence of group learning, (6) the industrialisation of the educational process, and (7) the privatisation of learning.

Distance education is presently well recognised and accepted. Yet emotionally many of the academics and administrators of formal system do not accept the distance education system. Emotionally there is still a strong belief that on campus teaching in the face-to-face situation is the only way of teaching. As Lord Perry, the first Vice-Chancellor of the British Open University expressed, "it may take decades rather than years to overcome this emotional reaction. We remember that every advance in education has been resisted for years and years."

The Users

Distance education is used at all levels of education—primary, secondary and tertiary—as well as in the non-formal sector of education.

It is not widely used in primary level to teach young children because they need intimate contact with a teacher to assist and support them learn, but it is used to teach primary level education to adults. The radio schools of Latin America are good examples of primary level adult education at a distance. Distance education is widely used at the secondary level. Air Correspondence High School in South Korea, School of Air in Australia, Telesecundaria in

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Regional Director, Indira Gandhi National Open University Regional Centre, CESS Building, Begumpet, Hyderabad-500016

Mexico and National Extension College in the U.K. are known examples of secondary level education at a distance. Distance education has also been used at the tertiary level. In the early period it is used by formal universities which teach students face-to-face—called by Desmond Keegan as the mixed model of distance education, University of Wisconsin in USA, Universities of New England, Queensland and Deakin in Australia, Universities having institutes of correspondence education, numbering about 35, in India are examples of distance teaching at university level.

Distance Teaching Universities

In 1970s a good number of universities and other higher education institutions were set up in both the developed and developing countries specifically to teach at distance. The founding of the British Open University marked the beginning of a new and prestigeous era in the history of distance education. There are now many independent, autonomous, full-fledged distance teaching universities in the world. Some of them are: (1) Open University (UK), (2) Allama Iqbal Open University (Pakistan), (3) Athabasca University (Canada), (4) Everyman's University (Israel), (5) Fern Universitat (West Germany), (6) Free University (Iran), (7) Sri Lanka Open University (Sri Lanka), (8) Sukhothai Thammathirat Open University (Thailand), (9) Central Radio and Television University (China), (10) University of Air (Japan), (11) Kyongi Open University (Korea), (12) Korea Air and Correspondence University (South Korea), (13) Open University (Netherlands), (14) Universitas Terbuka (Indonesia), (15) Universidad Nacional de Education a Distancia (Spain), (16) Universidad Estatal a Distancia (Costa Rica), (17) Universidad Nacional Abierta (Venezuela), (18) National Open University (Nigeria), (19) Al-Quds Open University (Jordan), (20) Andhra Pradesh Open University (India), (21) Kota Open University (India), (22) Nalanda Open University (India), (23) Indira Gandhi National Open University (India).

Distance Teaching Universities' Students

Distance teaching universities provide education at a distance for the following :

(a) school leavers who are qualified for traditional university entry but cannot be admitted because of non-availability of required places in traditional universities and colleges;

(b) adults who desire to acquire university level qualifications but cannot or choose not to apply for entry to a traditional university because they: (a) lack the education qualifications required for entry, (b) have family commitments, especially young children, which tie them to their homes, (c) are in full-time employments and cannot or choose not to give up their jobs, (d) live in institutions (e.g. the handicapped) which they are unable to leave, (e) prefer to study independently;

(c) professional and manpower groups who require vocational training, professional updating and increased knowledge levels but cannot be released from their employments to attend a campus based university or training colleges; and

(d) adults who wish to pursue lifelong learning opportunities (continuing education) unrelated to the pursuit of degree or diploma or certificate level qualification.

Objectives

Distance teaching universities are founded for the broad purpose of expanding and enlarging the higher educational opportunities. Borje Holmberg gives the following five reasons for setting up the distance teaching universities :

(a) the need felt in many countries to increase the offer of university education generally;

(b) a realisation that adults, with jobs, family and social commitments constituted a large group of prospective part-time university students;

(c) a wish to serve both individuals and society by offering study opportunities to adults, among them disadvantaged groups;

(d) the need found in many professions for further training at an advanced level;

(e) a wish to support educational innovation;

(f) a belief in the feasibility of an economical use of educational resources by mediated teaching.

Distance education emerged in the 1970s and early 1980s as a valued component of many national educational systems in both developed and developing countries. The foundation of the open universities, developments in communication and information technologies, a new sophistication in the design of print materials and improved support systems for the student learning at a distance—all these contributed to the larger availability and greater variety of distance education.

Open Universities

Distance teaching universities are called by different names such as Universities without walls, Television Universities, Universities of Air, Correspondence Universities, etc. The British Open University was to be originally an 'University of Air'. The word 'Open' in Open University reflects openness—openness with regard to students, openness with regard to place of study, openness with regard to pace of study, openness with regard to courses and openness with regard to completion of studies. Openness of the University implies that : it does not preclude students from entering the higher education sector on account of lack of prior formal academic qualifications; its education process is not classroom based but home based; its students can study at their own pace and place; its courses are flexible and interdisciplinary; it offers scope for independent choice of courses and application of effort; it puts less constraints on the time of completion of studies; and its teaching method utilises all the possible communication and information technologies.

This 'openness' is the cardinal feature of the distance teaching universities. It is often said that the British Open University's "uniqueness lies not merely in its application of modern communication technology, but also in its philosophical concept of openness." □

Privileges and Responsibilities of a College Principal

(Continued from page 2)

the worth of the degrees given by a university is to strive continuously for raising its standards and this is in the best interest of students and teachers.

I believe that the main argument for autonomy to a college is to give it an identity, to enable its teachers and principal to raise its standards high and to feel proud of their institution. This pride in the institution to which a student, a teacher or a principal belongs is important for building up a great institution. When a principal, his students and teachers get a feeling for the attainments of their institution, they would not tolerate any outside interference.

I still believe that being a principal is as great a responsibility as it is a privilege.

A principal has to love teaching and he has to set an example of good teaching. A principal has to love scholarship and he has to set an example by being a scholar. A principal has to love creation of new knowledge and he has to set an example for it. A principal has to have a keen desire to serve the community and he has to set an example for it. A principal has to be dedicated to courage, fairness, justice and fearlessness and he has to set an example for these. Above all, a principal has to love his students and teachers and do everything possible in his power for their welfare. A principal has to take special care of weak and poor students. A principal has to be a great rishi because so many persons look to him for inspiration and guidance.

Finally, a principal must have a great vision for his college and should work hard with great zeal, faith and conviction for making that vision a practical reality.

The country needs today not exhortions and speeches; it needs examples of men of great character, great dedication, great scholarship and great hearts. Lubricate your administration with love of students, of teachers, of scholarship and your country and humanity. India will have a bright future if we have faith in it. Your responsibility and privilege is to prepare leaders for the India of your dreams.

Approaches to Agricultural Planning

Contrasting the approach to agricultural planning, that is by and large followed at the national level, which is capital-biased with inadequate absorption of labour force in production, tends to shut the democratic participation of people and centralise the process of formulation of agricultural plans with the alternative strategy of agricultural planning being attempted in West Bengal over the last decade or so, Shri Jyoti Basu, Chief Minister, West Bengal, said, "within the limitation of the existing socio-economic structure, this alternative approach begins, on the basis of the strength of democratic movements of the common people, by trying to reorder, to the extent possible, the existing unequal distribution of land. In other words, it begins with redistributive land reforms." Shri Basu was delivering the Convocation Address at the 6th Annual Convocation of Bidhan Chandra Krishi Vishwavidyalaya. "This emphasis on land reforms, it may be noted, is not an exercise in charity, but is essentially a productive move on the basis of hard evidence of superior production performance on the part of poorer working peasants," he added. Excerpts

At the present moment, in my view, there are two alternative approaches to applied agricultural planning in our country. In one alternative approach, which is broadly followed at the national level, planning for agriculture begins by making no serious attempts to alter the existing unequal distribution of land.

Convocation

Persisting inequality in the ownership distribution of land at the national level has been noted in the latest Round of the National Sample Survey which shows that, for the country as a whole, only about 29 per cent of land is under the ownership of small and marginal farmers, and the remaining 71 per cent is owned by bigger farmers. As a consequence, in this approach, planning for production has tended to be viewed through the eyes of the landed gentry in agriculture. There has been, as a result, also a tendency to adopt a technology which is capital-biased with inadequate absorption of labour force in production. That such technologies may fail to absorb labour in production process has been noted in the recent Mid-Term Appraisal of the Planning Commission. The result is unemployment and insufficient generation of purchasing power of the common people in rural areas. But, then, more than 75 per cent of the common people in our country live in rural areas. Their insufficient purchasing power also means inadequate demand for industrial goods, and that acts as the major bottleneck on the growth of our industries. Agriculture should be looked upon as providing the basic foundation of our economy. Unless the purchasing power of the vast majority of the people connected with agriculture and allied activities is improved, market for industries will remain restrained and industries will not thrive.

When this is the social context, and this is the approach to agricultural planning, then agricultural research work which is tied up with this approach also often tends to be unduly biased in favour of over-use of capital in agricultural production, and without any serious attention to the need of absorption of labour force in agriculture. To put it different, a research culture gets encouraged which seems tilted towards indiscriminate adoption of so-called "foreign" technology, forgetting their inappropriateness in our social context and forgetting the much needed employment-orientation in the technology.

This entire approach is thus one of staying away from the aspirations of the vast majority of people. There has accordingly been an inherent tendency in this approach to shut the democratic participation of people out from the process of planning and to centralise the process of formulation of agricultural plans, including even the research programmes.

As an alternative to this strategy, a different approach to agricultural planning has been attempted in West Bengal over the last 10 years or so. Within the limitation of the existing socio-economic structure, this alternative approach begins, on the basis of the strength of democratic movements of the common people, by trying to reorder, to the extent possible, the existing unequal distribution of land. In other words, it begins with redistributive land reforms.

This emphasis on land reforms, it may be noted, is not an exercise in charity, but is essentially a productive move on the basis of hard evidence of superior production performance on the part of poorer working peasants. In this context, I may mention, with modesty, some of the advances that have been made in recent years to give our State the front position in the country in the sphere of land reforms. With the involvement of people through the Panchayats, and the administrative support, it has been possible till the end of December, 1987 to vest about 12.56 lakh acres of agricultural land. Nearly 17.27 lakhs of poor households have benefited from the distribution of vested land. It may be noted that of the total agricultural land distributed through land reforms in India, about 20 per cent has been contributed by West Bengal, although in the total agricultural land in our country, West Bengal's share is less than 4 per cent. With the implementation of land reforms in West Bengal, according to the National Sample Survey data (the same source as mentioned before), nearly 60 per cent of the total land has come to be owned by the small and marginal farmers. This has to be contrasted with the all-India situation where, as noted before, according to the National Sample Survey data, only about 29 per cent of land is owned by the small and marginal farmers. In West Bengal, in addition, the number of recorded bargadars has also increased to 13.75 lakhs by the end of December, 1987. If the land under barga cultivation is properly added to the land owned by the small and marginal farmers, then the proportion of total land over which the poorer farmers have certain operational control, will in fact, far exceed the previously mentioned figure of 60 per cent. Thus, through implementation of land reforms, an objective condition, very different in the all-India context, has now been created in our State where the entire planning of agriculture can be looked at through the eyes of the poorer working farmers

When the problem is viewed from the standpoint of common working farmers, then a different priority emerges in the provision of non-land inputs such as seeds, irrigation, fertilisers, etc. We consider that for making land reform measures effective, provision of these inputs through a socially appropriate choice of technology is absolutely essential. What should be the characteristics of this appropriate technology? The working farmers are endowed with labour power and there is, in rural areas, often a relative abundance of local resources. The appropriate technology in this social context will have to be inherently modern, but with a different objective. It should make efficient, improved and fuller use of labour and local resources. To this end, a new orientation in scientific agricultural research may be required. I appeal to the students, teachers, researchers and also non-teaching staff of Bidhan Chandra Krishi Viswavidyalaya to take up this scientific challenge. This may be a new step for the entire country.

For instance, we need to pay special attention to the socially optimum choice of cropping pattern. An emphasis has to be given on improved early-maturing aman paddy, so that adequate time is obtained for subsequent crops It is important to have appropriate needs which are suitable for our low-lying areas and rainfed conditions, and, at the same time, can show quicker and improved yields. It is equally important to have these seeds grown, as far as possible, within our State. Can we also give more attention to the growth of horticulture? We also need to extend further application of research in relation to cultivation of various crops and horticulture to areas like Sunderbans and other relatively less fertile lands in the different districts. It may be worthwhile to examine how far the vested lands, which have now been decided to be given to the Panchayat Samitis, may be used for cultivation of special crops, etc. suitable for such lands. Similarly, in the sphere of fertilisers, instead of relying only on chemical fertilisers, can we not think of an "optimum" mix of chemical and bio-fertilisers, where the bio-fertilisers can be developed by using local resources?

In the sphere of irrigation, which is one of the most crucial inputs for higher agricultural production, our emphasis is on extension of minor irrigation facilities particularly those which are labour-intensive and local-resource-based. Along with this, expeditious completion of existing large irrigation projects is essential. Here, I cannot help mentioning an issue relating to the completion of the Teesta Project, which can vastly improve agricultural production in five districts of North Bengal. It is a project not only of regional concern, but also of national importance, and therefore with a justifiable claim for the Central financial assistance. The State Government has already spent more than Rs. 200 crores on this project, but the Central Government has not spent more than a paltry sum of Rs. 5 crores despite our repeated requests. On this issue, when one recalls the generous Central support for building up of the irrigation network for Northern India, one feels a sense of relative neglect for eastern region.

In spite of this lack of Central support, we have tried, within our limited financial resources, to extend the irrigation facilities and facilities regarding other inputs, and then co-ordinating these with land reform measures. As a result of this co-ordinated approach, beginning with land reforms and then supporting provision of other inputs, it has been possible to increase the State's agricultural production in recent years. The total foodgrains production of the State has increased from 91.28 lakh tonnes in 1985-87 to 96.26 lakh tonnes in 1986-87 which is not only the all-time record production for the State, but it also includes in itself rice production of 84.63 lakh tonnes which has accorded our State the first position among all the States in respect of rice production in that year. Along with the level of total production, productivity of foodgrains per hectare in West Bengal has also been 1,530 kgs./hectare against the national average of 1,142 kgs./hectare and that of rice 1,574 kgs./hectare as against the national average of 1,482 kgs./hectare in 1985-87. In the current year 1987-88, despite the severe floods, the production of aman rice has already exceeded the production level of the last year, and it is expected that the total foodgrains production of this year may reach and even exceed the last year's record production of total foodgrains. Incidentally, in recent years the production of oilseeds in our State has also shown a remarkably rising trend.

Since attempts have been made to use labour in the production process as far as possible, there has been, along with increase in agricultural production, also an increase in recent years in the average wage rate for agricultural workers in the State, the average daily wage rate, cash and kind together, increasing from about Rs. 5.60 in 1976-77 to more than Rs. 13 in recent years. In some of the districts in South Bengal, the average daily wage rate has even crossed Rs. 20 in some parts of the year.

As a result of this improvement in the economic condition of the poorer sections in rural areas, there has been a related growth of cottage and small-scale industries which are linked with agriculture and which produce mass consumption goods such as handloom products. Over the last ten years, growth of registered small units has been significant in the State—from a figure of less than 1 lakh in 1976-77 to the present figure of about 2.5 lakhs. The production in the handloom sector has also nearly doubled itself over this period. This production increase in the small-scale, we think, needs to be strongly supported by the growth of large industries as well. Our endeavour is to draw younger people to industries. In this endeavour, I am sorry to say, we are not getting the needed co-operation from the Central Government.

Since all these production activities are centred around the aspirations and interests of the common people in the rural areas, we have decided to involve the local people through the elected Panchayats in formulation and implementation of plan schemes in all the sectors of rural economy, beginning from land reforms, through provision of irrigation and other facilities to the sphere of small-scale industries and other sectors. Recently, this involvement of the people has been further co-ordinated through the setting up of the District and the Block Planning Committees, with representation of both the elected Panchayat and the other representatives as well as the officials of all the concerned departments of the respective levels. Decision-making in relation to nearly 40 per cent of the State Plan budget has been decentralised in this manner to the district and the block level. Within the overall understanding of priorities, this delegation of powers may now be extended to 50 per cent of the total plan budget in very near future.

When the new research activities will be carried out by the Bidhan Chandra Krishi Viswavidyalaya, it will be necessary to test the knowledge at the field level and have the feed-back on a regular basis. I suggest that this two-way interaction between the researchers in the University and the common farmers in the field be co-ordinated through these district and block-level Planning Committees along with the necessary support of the Department of Agriculture.

There is sometimes a resistance among some of our young people belonging to different disciplines to go to the villages. But for agricultural graduates and research workers, despite inconveniences, motivation and purpose in life must be not only to work in the villages but to earn the respect and love of the peasant community. They must carry the results of new knowledge to the farmers, and at the same time, try to learn from the farmers in the field.

With the new alternative social perspective in this State, and this organisational framework involving the common people, there is a refreshing challenge before the entire community of the University—the researchers, teachers, non-teaching staff and students, and particularly those among you who are at the threshold of applying your knowledge. I trust that you will accept this challenge. □

Methods & Techniques of Teaching Values

A 4-week All India workshop on 'Methods and Techniques of Teaching Values' was organized at the Department of Teacher Education, D.A.V. College, Dehra Dun. The objectives of the workshop were to familiarize and practise various traditional and modern methods and techniques of teaching values at college and university level and also to prepare a value education kit for teaching values to be used by teachers of the colleges and universities.

Sponsored by the University Grants Commission, the workshop was inaugurated by Swami Chhama Nand Maharaj of Rama Krishna Mission. Dr. S.P. Kulshrestha of the Deptt. of Teacher Education, D.A.V. College, Dehra Dun, who was also the director of the workshop, presided. Prof. H.H.A. Borai, Vice-Chancellor, Garhwal University, Srinagar delivered the keynote address on value education and role of teachers at college and university level. Lecturers, Readers and Research Fellows from over 15 universities in the country attended the workshop.

The topics discussed at the workshop included Meaning and nature of values; Development of Value education and value crisis, Value education, Value inculcation programmes and value teaching; National Policy of Education in relation to value education; Identification methods of values; Traditional methods of teaching values like oral preaching, sermonising, stories with morals, biographies, exhortive writing, Assembly programmes, formal study programmes, social service programmes, cocurricular and cultural activities, Trainees' services and projects, etc.

Modern value clarifying approaches for value development were also discussed in detail. The techniques like critical incident sheet, value activity love list, value games, value voting, value continuum, incomplete value sentences, role playing, meditational counselling and fantasy exploration, etc. were also dealt at length alongwith demonstrations.

Four value education kits, namely, for teaching Social, Punctuality, Scientific and National Values, were prepared by the participants during the course of the workshop. Each value was analysed in detail and defined operationally. All relevant characteristics were identified. Behavioural dispositions related to each value were discovered and framed under kit. The behavioural objectives, methodology, activities, teaching strategies, teaching/learning material, evaluation scheme, etc. were finalized after an indepth discussion for each value kit. General guidelines for using these kits were also formulated.

The following recommendations emerged at the workshop :

1. There should be empirical evidence to change the prevailing education system based on value education through research.

2. System approach through different agencies towards value teaching/value development and the whole process of education should be oriented towards value education.

3. The Central & State Governments should take immediate steps to introduce value education in all the institutions.

4. Voluntary organizations may conduct value orientation programmes for the students, teachers and parents and prepare teaching-learning material for value education.

5. A separate Teacher Training University be established in every state wherein value education programmes should be made an integral part of the teachers training programmes.

6. UGC and NCERT should make provisions for value oriented education throughout the country with a flexibility in approach. However, the UGC should take a lead in introducing value education programmes for teacher at higher education level belonging to all the faculties.

7. Research in value education regarding prioritization of values, curriculum development, methodology, and evaluation strategies should be given priority.

8. A Foundation Course in value-education at higher education level should be introduced.

9. Educational Technological Approach should be adopted to make value education programmes more effective.

10. Teacher orientation programmes should be taken up at the national, state, regional and district level to train teachers in the effective methods of development of values among students.

11. SCERT, State Universities and voluntary organizations should be given responsibility of producing literature and teaching learning material especially designed for value education programmes in regional languages.

12. College and university management should plan and provide activities having social relevance during the academic year as well as during holidays with a real spirit of Social Service. It should be made obligatory to students to par-

ticipate in atleast three activities and a certificate may be awarded. The environment of colleges and universities should be designed in a way which may help students and teachers to identify, understand and internalize the relevant and desirable values.

13. Parents should invariably be involved in value education programmes at higher education level. They should also be informed about various value activities/value programmes to be undertaken at the college or university.

14. Value Education Kits should be prepared for each important value and should be validated scientifically. They should be distributed free of cost to the colleges and universities. The teachers should be encouraged to make use of these kits effectively. UGC, AIU, NVC, NCERT, etc. should be called upon to organize training courses for preparing, adapting and using these kits effectively.

15. Whatever relevant is there in ancient system of Indian education, may be adopted in modern context as guidelines, and base for value development programmes in the country.

16. Evolutionary nature of values should be kept in mind while organizing value development programmes. Value education should be viewed in the context of present situation of man and his changing environment.

17. Detailed guidelines, uniform throughout the country, related to value teaching and value development programmes should be prepared and made available to teachers who should be motivated to use these guidelines effectively at higher education level.

APOU Building Complex

Dr. Shankar Dayal Sharma, Vice-President of India, said that the Open University System was an innovative endeavour. Unlike the conventional system, the Open University has greater latitude in admission criteria, low fees, large scope for choice of subjects and flexibility in course duration. With proper overall management and systematic use of media, the Vice-President said, the Open University system would prove to be very successful in future, more particularly in the Indian context. Dr. Sharma was speaking after laying the Foundation Stone of the Building Complex of the Andhra Pradesh Open University (APOU) in Hyderabad recently.

Dr. Sharma called upon the universities to give importance to ethics and morality in education. He expressed concern at the erosion of moral values and asked the Andhra Pradesh Open University to examine the possibility of introducing Orientation Courses on ethics and moral codes within the curriculum. The Vice-President recalled the observation made by Dr. Radhakrishnan Education Commission which said, "If we concentrate only on giving education and neglect the development of mind and spirit, we will be like the rakshasas of our mythology who have enormous power without any overriding ethical purpose". Dr. Sharma further said that those involved in the management of university education in the country should never lose sight of this important matter. He made a special appeal to APOU to introduce courses in Agriculture, Poetics, and Fine Arts and also some courses for retired persons under the Open University system.

In his presidential address, Shri N.T. Rama Rao, Chief Minister of Andhra Pradesh, said that the government was giving special importance for the cause and promotion of education. He said that four universities were started during his tenure i.e, the Andhra Pradesh Open University, first of its kind in the country; the Telugu University for the promotion of Art and Culture; the Mahila University for Women's Education; and the University of Health Sciences. A fifth university, namely, 'Grameena University' to focus the concept of Rural Development as envisaged by the Father of the Nation, Mahatma Gandhi was also being planned, he said.

Prof. G. Ram Reddy, Vice-Chancellor, Indira Gandhi National Open University, who was a Special Invitee, said that the foundation Stone Ceremony was the beginning of the fulfilment of a dream. He said that future belonged to distance education and the same was catching up in the third world countries.

INFOTEK National Conference

The Institution of Information Technology (INFOTEK) will organise a National Conference on 'Applications of Mini and Micro Computers in Documentation, Information and Libraries' on 28-30 September, 1988 at the Central Leather Research Institute, Madras. The topics proposed to be discussed at the conference include Compilation of tools for information handling : Thesaurus, Bibliography, Directory, Union Catalogue, etc; Design and development of bibliographic databases : Standard formats, CCF and software techniques for creating the formats; On-line search and retrieval of information : Experiments, experience and future prospects;

Specific bibliographic information handling software packages : case studies—CDS/ISIS, MINISIS, etc ; Data Base Management System (DBMS) : Applications—dBASE II, III and III+, UNIFY, etc.; Library automation; Integrated Information Systems/networks : national, regional and international; and Constraints and problems in the development and/or implementation.

Further details with regard to participation may be obtained from Mr. R. Vengan, Convener, INFOTEK Conference, No. 57, Scientists' Apartments, CLRI Staff Quarters, Adyar, Madras-600 020.

Course in Computer Applications

The L.N. Mishra Institute of Economic Development and Social Change, Patna, is reported to have been selected as one of the nine centres in the country for starting a three-year full-time Master's degree course in "computer application" (MCA). This is in recognition of the excellence achieved by the Institute in management education.

The Institute, affiliated to the University Grants Commission (UGC) and recognised and aided by the Ministry of Human Resource Development, is already collaborating with the School of Business, Queen's University at Kingston (Canada) and the prestigious Ahmedabad based Indian Institute of Management. Set up initially as the Bihar Institute of Economic Development, it was remodelled as Centre of Business Management Education and renamed in 1975 as the L.N. Mishra Institute of Economic Development and Social Change.

CAD/CAM Centre

A Computer Aided Design and Manufacture (CAD/CAM) Centre is being set up at the Thapar Institute of Engineering and Technology (TIET), Patiala in the Department of Mechanical and Industrial Engineering with a special grant of Rs. 13 lacs from the Ministry of Human Resource Development, Government of India. Three Omega CAD work stations have been purchased along with the following softward : Pro-DRAFT (2D/3D drafting package), 3-D Solid Modeller, GIFTS (FEM Package), XL-NC (NC Package), and Pro-FEM.

The purpose of the Centre will be the use of existing packages and

Attention Scientists and Technologists

Indian Expertise in Science and Technology

The Research Cell in Economics of Education of the Association of Indian Universities is conducting a survey of Indian expertise in science and technology in the University sector. It is proposed to prepare a comprehensive database of the skills, knowledge and facilities of the university level institutions as well as a directory of experts in various disciplines of science and technology. The survey is also intended to catalogue the expertise and current research work of Indian scientists and technologists in various fields of science and technology, and will be used as an input for the compilation of a comprehensive database on the scientific and technical manpower in the country. The database will provide a ready reference to the industry, commerce and allied sectors of Indian economy for identifying experts in the relevant fields.

The scientists and technologists engaged in teaching and research in the universities and university level research institutions in India **at the lecturer or equivalent and above levels only** are requested to fill-up the prescribed form, which can be had from the undersigned. The completed form should be returned latest by **September 30, 1988**.

The responses from the academic and research staff are solicited, and their cooperation would be highly appreciated in our venture to build up a comprehensive database.

For the prescribed form, kindly write to :

M M Ansari
Joint Director
Research Cell, Economics of Education
Association of Indian Universities
AIU House, 16 Kotla Marg
NEW DELHI 110 002

developing/modifying packages for individual requirements. These facilities will be useful for introducing the concept of CAD/CAM, a fast growing area in today's technology, to the students and personnel from Industries.

SNDT Offers New Courses

The Department of Continuing and Adult Education and Extension Work of the SNDT Women's University proposes to start diploma courses in adult and continuing education, travel and tourism, banking, interior decoration, modern journalism, photography, conversational English, designing, gemmology and Marathi journalism. Further details can be had from the university's department located at 1, Nathibai Thackersey Road, Bombay 400 020.

Video Cassette Released

Prof. S.K. Khanna, Secretary, University Grants Commission (UGC), recently released a Video Cassette on Distinguished Visiting Faculty developed by the Academic Staff College, Andhra University. The Cassette contains 7 lectures delivered by eminent academicians of the country relating to education, society and development. The Cassette will be exchanged with other staff colleges in the country to disseminate learning material for orientation programme of college lecturers.

Computer Literacy Course

The Computer Resource Centre at Thapar Institute of Engineering and Technology (TIET), Patiala conducted a 3-week Computer Literacy Course for School Teachers under CLASS (Computer Literacy And Studies in Schools) Project. The objective of the course was to familiarise the teachers with the range of computer applications in all walks of human activity and the computer's potential as a controlling and information processing tool.

Thirsty five teachers from 10 schools, participated in the course.

News from Agril. Varsities

Training on Gasifiers

The School of Energy Studies for Agriculture of the Punjab Agricultural University (PAU), in collaboration with the Indian Council of Agricultural Research (ICAR) and Department of Non - Conventional Energy Sources, Government of India, organised a specialised training course on Biomass Gasifiers. The first of its kind organised on a national level, the course included lectures on various aspects of biomass gasifiers, practicals on operation and testing of these gasifiers and also field visit to see the installation of gasifier working at one of the Saw Mills of the Punjab State Forest Development Corporation at Patiala. The lectures were given by the eminent faculty drawn from nationally renowned institutions and also faculty of School of Energy. Dr. Bill A. Stout, a world renowned Energy consultant from U.S.A. also attended.

Presiding over the concluding function, Dr. Sukhdev Singh, Vice-

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ASSOCIATION OF INDIAN UNIVERSITIES

CORRESPONDENCE COURSE IN EVALUATION METHODOLOGY & EXAMINATIONS

Applications are invited from college/university teachers for admission to Correspondence Courses in Evaluation Methodology and Examinations at Basic Level, Intermediate Level and Advanced Level/Special Professional Course. The duration of each of the three courses is six months. A personal 'Contact Programme' for three days is planned for each of the three courses. Universities/Institutions sponsoring candidates can meet the registration/course fees from out of unassigned grants by UGC.

Request for prospectus and application form accompanied by a crossed Indian Postal Order for Rs. 10/- drawn in favour of the Secretary, Association of Indian Universities and a self addressed stamped envelope (Rs. 2/-) should reach the Director (Research), Association of Indian Universities, AIU House, 16 Kotla Marg, New Delhi 110002. Last date for receipt of applications is **15th September** for non-sponsored and **26th September, 1988** for sponsored candidates.

Chancellor, PAU said that non-conventional sources should be harnessed for generating energy for use at homes and farms since the traditional sources of energy like wood, coal and fossil fuels were gradually exhausting. He appreciated the work done at the School of Energy in developing gasifiers. He pointed out that the technology was at present in infant stage and therefore, needed field testing at different locations. He also pointed out the importance of feedback information.

Earlier, Professor A.P. Bhatnagar, Director of the School, while welcoming the guests, said that the School of Energy had made a notable contribution in the availability and characterization of biomass in the Punjab State and the handling systems of biomass for power generation. He told that the range of gasifiers working on biomass of capacity 5, 10, 20, 40 and 60 KW have been designed and developed by the School of Energy and nine such gasifiers were at present in use in the Punjab State. These gasifiers had found wide application in pumping irrigation water, generating electricity and could be used as mobile power source for tractors and vehicles. The use of gasifiers combined with rural forestry programmes and judicious use of crop residues could bring lot of saving in the diesel fuel and valuable foreign exchange in the country, he added.

Forestry Varsity for Andhra Urged

The Andhra Pradesh Forest Minister, Mr. G. Muddu Krishnama Naidu, pleaded for setting up of a University of Forestry and Dryland Horticulture at Tirupati to serve the needs of the southern States. He was participating in the national seminar on Dryland Horticulture at the Central Research Institute for Dryland and Agriculture (CRIDA), Hyderabad. He said Tirupati and Hyderabad offered ideal conditions for locating dryland nurseries and urged the ICAR to start them with atleast one crore seedlings capacity.

The Forest Minister advocated a strategy of integrating farming in arid and drylands with forestry and horticulture so that farmers in such areas survive and prosper even without sufficient water. He said a realistic view of the potentialities and shortcoming of dryland horticulture should be taken, as confining oneself to only one or two aspects of dryland horticulture has not served our objectives. There is a need to gear up the research and extension package to the problems of the grower as well as to the processor in a time bound programme, he said.

Inaugurating the seminar the Agriculture Minister, Mr. Vasantha Nageshwara Rao, regretted that there was no Centre in the country to demonstrate free farming technology. This, he said, was essential for economic development of dryland and wasteland in the country. He said that in the last few years about 10,000 hectares had been brought under dryland and horticulture in the State. Out of about 28 million hectares cultivable land 9 million hectares constituted degraded forest land or wastelands and this can be used for developing a strong agro-based industry in rural areas, he said.

Dr. N.S. Randhawa, Director General, ICAR and Secretary (DARE), Government of India, said that the area under cultivation had increased from 124 to 130 million hectares. Of this 31 million hectares is partially conducive for farming, 30 m. hectares was under assured rainfall 30 m hectares under moderate rainfall, and another 30 million hectares in less dependable areas.

Dr. K.L. Chadha, Deputy Director General (Horticulture), ICAR, in his keynote address said large areas were still unexploited for dryland farming. There was a need to create awareness among farmers on the economics and the viability of dryland farming. He said that Govt. was considering a proposal for setting up a National Research Centre for Arid Horticulture.

Crop Research Centres

The Indian Council for Agricultural Research (ICAR) plans to set up a series of crop oriented research centres to give a boost to horticultural crops in the country. According to Dr. N.S. Randhawa, Director General, ICAR, Research centres will be set up for crops such as banana, onion, garlic and medicinal plants. Work had already begun on four such centres in Maharashtra (citrus), Himachal Pradesh (mushroom), Kerala (spices) and Karnataka (cashew).

Dr. Randhawa said research on horticultural crops had been going at various research institutes of the ICAR. But the new centres will be oriented for one crop each only. These centres will emerge centres of excellence for these crops.

We Congratulate ..

1. **Dr. (Mrs) Lalitha Kameswaran who has been appointed Vice-Chancellor of the Dr. MGR Medical University, Madras.**
2. **Dr. D. Swaminathan who has been appointed Vice-Chancellor of the Jawaharlal Nehru Technological University, Hyderabad.**

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

RESEARCH IN PROGRESS

A List of Research Scholars Registered for Doctoral Degrees of Indian Universities

SOCIAL SCIENCES

Journalism

1. Thomas, M.V. *Popularity determinants of Malayalam magazines.* Kerala. Dr. M. Thangadorai, Reader, Department of Communication and Journalism, University of Kerala, Kariavattom.

Psychology

1. Paul, Mini K. *Effects of separation from parents on the development of personality and adjustment of adolescent boys and girls in Kerala.* Kerala. Dr. (Mrs.) Rita Krishnan, Lecturer, Department of Psychology, College for Women, Trivandrum.

Sociology

1. Gopinathan Pillai, P. *Role of left movement in agrarian relations in Kerala.* Kerala. Dr. G. Ramachandra Raj, Prof., Department of Sociology, University of Kerala, Kariavattom.

2. Mumtaz Begum, A. *Impact of ICDS on child rearing particles : A sociological study.* Kerala. Dr. Jacob John Kattakkayam, Lecturer, Department of Sociology, University of Kerala, Kariavattom.

3. Reghu Ram Das, J.R. *Social status of tribal women in Kerala.* Kerala. Dr. M. Indukumari, Lecturer, Department of Sociology, University of Kerala, Kariavattom.

4. Roy, M. Sam. *The relevance of decentralising power and planning in poverty alleviations.* Kerala. Dr. Jacob John Kattakkayam, Lecturer, Department of Sociology, University of Kerala, Kariavattom.

5. Swami, Meenaxi. *Muslim mahilaon kee badalti huyee sthiti : Bhopal, Indore kee mahilaon ka tulnatmak adhyayan.* Devi Ahilya. Dr. K. Rajwade, Prof., Department of Sociology, Government College, Dhar.

6. Tiwari, Damayanti. *Indore mein paramparagat Hindu parivarik vyavastha per nagarikaran ka prabhav.* Devi Ahilya. Dr. T.R. Seth, Asstt. Prof., Department of Sociology, P.M.B. Gujarati Arts and Law College, Indore.

Political Science

1. Tiwari, Rashmi. *Bharatiya samajvadi chintan mein Acharya Narendra Dev ka sthan : Ek mulyankan.* HS Gour. Dr. (Smt) Shobha Shankar.

2. Tiwari, Surendra Kumar. *Bharatiya rajniti mein kshetriya pravrittiyan : Ek vishleshnatmak adhyayan.* HS Gour. Prof. R.C. Dubey, Reader, Department of Political Science, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

Economics

1. Bhawdeep Singh. *An analysis of the socio-economic concomitants of social forestry in Punjab : A study of District Bathinda.* Punjabi. Dr. G.S. Bhatnagar, Prof. and Head, Department of Sociology, Punjabi University, Patiala and Dr. A.S. Bhatia, Reader, Department of Economics, Punjabi University, Patiala.

2. Choudhury, Toufic Ahmed. *An evaluation of the performance of commercial banks of Bangladesh.* HP. Dr. J.P.

Bhati, Department of Economics, Himachal Pradesh University, Shimla.

3. Karam Chand. *Levels of living and inequalities in the tribal economy of District Kinnaur, H.P.* HP. Dr. Dalip S. Thakur, Department of Economics, Himachal Pradesh University, Shimla.

4. Mishra, Archna. *Madhya Pradesh mein chamra vastu nirman udyog ka arthik adhyayan : Sagar Nagar ke vishesh sandarbh mein.* HS. Gour. Dr. S.K. Pandey.

5. Paraham Ahad Ali. *Iran's monetary system : A study of working of Central Bank of Iran since 1975.* Shivaji. Dr. V. B. Ghuge, Head. Department of Economics, Shivaji University, Kolhapur.

6. Rathi, Vanita. *Taxation of agriculture in Himachal Pradesh.* HP. Dr. N.K. Sharda, Department of Economics, Himachal Pradesh University, Shimla.

7. Satish Kumar. *Nature and extent of unemployment in Kinnaur District of Himachal Pradesh.* HP. Dr. Dalip S. Thakur, Department of Economics, Himachal Pradesh University, Shimla.

8. Sharma, Navita. *Pattern of net income from crop farming under technical change.* HP. Dr. L.R. Sharma, Department of Economics, Himachal Pradesh University, Shimla.

Public Administration

1. Pathak, Mahesh Chander. *A study of organisation, functioning and development of dairy industry in India.* HS Gour. Dr. S. B. Srivastava.

Commerce

1. Kaistha, Sunita. *Export promotion in India with special reference to the role of exim.* HP. Dr. Maneet Kumar. Department of Commerce and Business Administration, Himachal Pradesh University, Shimla.

2. Madhu. *Evaluation of commercial banks performance relating to Districts credit plan.* HP. Dr. Rajinder Sharma, Department of Commerce and Business Administration, Himachal Pradesh University, Shimla.

3. Mane, Balkrishna Shamrao. *Role of Indian Banks' Association (IBA) in the development of India's banking industry.* Shivaji. Dr. R.R. Doshi, Department of Economics, Shivaji University, Kolhapur.

Home Science

1. Gill, Parveen. *An integrated approach to the energy management in rural kitchens.* Delhi. Dr. S. Malhan and Dr. S. Kumar, Department of Home Science, University of Delhi, Delhi.

2. Narula, Vinita. *A program to assess the incidence. the level of knowledge and the adoption of recommended practice for the control of goitre among the adolescent girls in and around Delhi.* Delhi. Dr. M. Seth, Lady Irwin College, Delhi and Dr. K.G. Krishna Murty, Department of Home Science, University of Delhi, Delhi.

HUMANITIES

Philosophy

1. Upadhyay, Bindu. *Pramukh upanishadon ka niti darshan.* Devi Ahilya. Dr. R.N. Vyas, Prof. and Head, Department of Philosophy and Psychology, Govt. Girls' P.G. College, Indore.

Religion

1. Rahiman, H. Abdul. *Vakkom Moulavi and the renaissance movement among the muslims.* Kerala. Dr. C. K. Kaream, Coonamthai, Edapally, P.O. Cochin.

Language & Literature

English

1. Goswami, L.K. *Black autobiographical writings and dalit autobiographical writings in Marathi: A study in contrast.* Shivaji. Dr. V.V. Badve, Department of English, Shivaji University, Kolhapur.

Russian

1. Menon, Parvathy Venugopalan. *Comparative study based on themes and styles of post revolutionary literature in the U.S.S.R and post independent Malayalam literature.* Kerala. Dr. K. Govindan Nair, Prof. and Head, Department of Russian, University of Kerala, Trivandrum.

Hindi

1. Chowksey, Usha. *Shri Harikrishan Premi : Vyaktitva evam krititva ka punra mulyankan, Gyat agyat sandarbhon ke pariprekshya mein.* Devi Ahilya. Dr. S.S. Vyas, Prof. (Retd.), Govt. Arts and Commerce College, Indore.

2. Gupta, Beena. *Bhaktikaleen kavya mein nari kee sthiti.* Banasthali. Dr. Jagdish Prasad Sharma, Prof. and Head, Department of Hindi, Banasthali Vidyapith, Rajasthan.

3. Salodia, Vijay Laxmi. *Balkrishna Sharma Naveen ke kayya : Bhavbodha ke ayam.* Banasthali. Dr. Lal Chand Jain, Lecturer, Department of Hindi, Banasthali Vidyapith, Rajasthan.

History

1. Lageena, A. *The Dutch East India Company and the Kerala Kingdoms, 1663-1795.* Kerala. Dr. A.P. Ibrahim Kunju.

2. Nair, Latha G. *British residents in Travancore.* Kerala. Dr. A. Gopalakrishnan.

3. Panicker, Raj. *Spiritualism in Kerala culture, 1956-1986.* Kerala. Dr. A. Gopalakrishnan.

4. Reetha, S. Prabha. *History of Jenmi, Kudiyan system in Travancore from 1850 to 1950.* Kerala. Dr. N. Sasidharan Nair.

5. Sarojini, P. *Political agitation in Travancore from 1891 to 1938.* Kerala. Dr. G. Krishnan Nadar.

6. Sivankutty, D. *British relations with Travancore, 1840-1860.* Kerala. Dr. G. Krishnan Nadar.

7. Umadevi, K.G. *The evolution of legislature in Travancore, 1888-1947.* Kerala. Dr. N. Sasidharan Nair.

8. Vijayakumaran Nair, K. *History of crime and punishment in Travancore.* Kerala. Dr. A. Gopalakrishnan, T.C. 9/1597, Sasthamangalam, Trivandrum.

THESES OF THE MONTH

A List of Doctoral Theses accepted by Indian Universities.

SOCIAL SCIENCES

Psychology

1. Happali, Arunkumar Basavanneppa. *A study of organizational identification and work identification in relation with personal factors.* Karnatak. Prof. K.R, Mallappa, Department of Studies in Psychology, Karnatak University, Dharwad.

2. Hooja, Raj Vir Singh. *Face identifications as function of personality, target disguise and time delay.* Meerut. Dr. S.N. Rai, Reader, Department of Psychology, Meerut University, Meerut.

3. Mehrotra, Prabodh. *Personality dimensions, mental health and self-concept of rural adolescents belonging to different caste groups : A comparative study.* BHU. Dr. M. S.L. Saxena, Prof. and Head, Department of Psychology, Banaras Hindu University, Varanasi.

4. Pal, Anita. *A study of competition and cooperation in high school children as related to personality and parental orientation.* Panjab.

5. Prem Kumar. *A study of the personality correlates of demand aware and unaware subjects in a verbal conditioning task.* Meerut. Dr. B S. Gupta, Department of Psychology, Banaras Hindu University, Varanasi.

6. Sharma, Kushal. *Handedness congnitive abilities, personality and hemisphericity.* Meerut. Dr. S.C. Sharma, Department of Psychology, Meerut College, Meerut and Prof. M.K. Raina, Department of Education, National Council of Educational Research and Training, New Delhi.

7. Sharma, Tripta. *Recognition for words as a function of semantic and orthographic orienting task and individual differences in trait anxiety.* Meerut. Dr. B.S. Gupta, Department of Psychology, Banaras Hindu University, Varanasi.

8. Singh, Rana Pratap. *Role conflict and role ambiguity as moderators of the relationship between supervisory orientation and organizational effectiveness.* BHU. Dr. A.P. Singh, Reader, Department of Psychology, Banaras Hindu University, Varanasi.

9. Singh, Vinod Kumar. *Personality make-up and parental effectivity as correlates of national social integration.* Meerut. Dr. N.S Chauhan, Prof. and Head, Department of Psychology, Meerut University, Meerut.

Sociology

1. Jain, Manju Kumari. *Karyasheel mahilaon ke rajnitik drishtikon : Samajik parivartan ke sandarbh mein adhyayan.* Rajasthan. Dr. D.B. Mathur, Director, Centre for Gandhian Studies, University of Rajasthan, Jaipur.

2. Lallan Singh. *Gramin nirdhanata evam samanvit gramin vikas karyakram : Bihar Rajya ke Rohtas Jile ke Kudara Block per adharit ek samajvaigyanik adhyayan.* BHU. Dr. (Miss) Asha Mehrotra.

3. Mohana Rao, K. *Continuity and change in cultural patterns of Kolan Tribe.* Osmania.

4. Munni. *Nari prajanan abhiprenana ka samajvaigyanik adhyayan.* BHU. Dr. P.V. Tiwari.

5. Rai, Rama Shanker. *Adhunikikaran, Hindu Muslim paramparayen evam antah dharmik parasparikata : Varanasi ke Hindu, Muslim samudayon per adharit ek samajshastriya adhyayan.* BHU. Dr. P.N. Pandey.

6. Singh, Anil Kumar. *Gramin samajik sanrachana, log, bhumi aur arthatantra : Mirzapur Janpad ke Jamalpur Vikas Khand per adharit ek samajvaigyanik adhyayan.* BHU. Dr. Muhammad Salim.

7. Singh, Chandra Pal. *Janjatiya samudaya evam audyogikaran : Mirzapur Janpad kee janjatiyon per Dala Cement Factory ke prabhavon ka samajvaigyanik adhyayan.* BHU. Prof. S. Tripathi, Reader, Department of Sociology, Banaras Hindu University, Varanasi

8. Vishwakarma, Ramashankar. *Gram Didhvat, Jile Banda ke gramin gutvad ka samajshastriya adhyayan.* Bundelkhand. Dr. V.N. Seth, Principal, Christ Church College, Kanpur.

9. Yadava, Hari Bansh. *Ek anusuchit jati ka samajik jeevan : Azamgarh Janpad per adharit anusuchit jatiyon mein gramin Pasi Jati ka samaj vaigyanik adhyayan.* BHU. Prof. S.K. Srivastava, Head, Department of Sociology, Banaras Hindu University, Varanasi.

Social Anthropology

1. Nataraj. *Sin and crime among the Iranis.* Karnatak. Dr. M.K. Kadetotad, Reader, Department of Studies in Anthropology, Karnatak University, Dharwad.

2. Padmavathi, Dama. *Caste and occupational change study of a bangle-making caste.* Andhra.

3. Ray, Biswanath. *Socio-economic gradients in demographic variabls : A study on the Muslims of West Bengal.* Calcutta.

4. Sonowal, Minarva. *Studies on the Flake and Blade industries of the Garo Hills, Meghalaya.* Gauhati. Dr. T.C. Sharma, Head, Department of Anthropology, Gauhati University, Guwahati.

Social Work

1. Amar Nath Singh. *Child labour in carpet weaving.* Kurukshetra.

2. Devi Prasad, Bammidi. *Dowry practice in the urban setting : A causal study.* Andhra.

Political Science

1. Awasthi, Rashmi. *1967 ke pashchat sangh-rajya sambandhon ke badalate swarup ka vishleshanatmak adhyayan : Madhya Pradesh ke vishesh sandarbh mein.* HS Gour. Dr. R.C. Dube, Head, Department of Political Science and Public Administration, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

2. Chakravarti, Milan Kumar. *Charismatic authority in India from Gandhi to the present day.* Rabindra Bharati.

3. Deb, P.K. *Integrated tribal development project : A study of its socio-political and administrative implications, with special reference to Kuchinda Subdivision.* Sambalpur. Dr. A.P. Padi, Prof., Department of Political Science and Public Administration, Sambalpur University, Jyoti Vihar, Burla and Dr. S.L. Srivastava, Prof., Department of Sociology, Ravishankar University, Raipur.

4. Muthukrishnan, S. *The President's rule under article 356 of the Constitution with reference to Kerala : A critical study.* Madurai.

5. Shahi, Ajit Kumar. *A study of the critique of Nehru's Socialism, 1946-1964.* Bihar. Dr. R. Pandey, Prof., Department of Political Science, Bihar University, Muzaffarpur.

6. Sinha, Ranjit. *Rural leadership, panchayat raj and rural development.* NBU.

7. Suran Naidu, Dharmana. *Congress party building in Srikakulam District, Andhra Pradesh.* Andhra.

8. Thapa, Ganga Bahadur. *Peasant Movement with special reference to agrarian reform in Nepal, 1950-70.* BHU. Prof. P.D. Kaushik, Reader, Department of Political Science, Banaras Hindu University, Varanasi.

Economics

1. Agarwal, Puran Chand. *Perspective of oilseeds in India 2001 AD : An analysis of demand and supply of oilseeds and the factors affecting growth of oilseeds in India.* Meerut. Dr. B.S. Sarin, Department of Economics, M.M. College, Modinagar and Dr. Padam Singh, Joint Advisor, Perspective Planning Commission, New Delhi.

2. Chaubey, Awadhesh Kumar. *A study of lab to land programme of Varanasi, U.P.* BHU. Dr. B.D. Pandey, Prof., and Head, Department of Extension Education, Banaras Hindu University, Varanasi.

3. Dash, Satyanarayan. *Role of working of handloom industry in Western Orissa.* Sambalpur. Dr. R.S. Rao, Reader, Department of Economics, Sambalpur University, Jyoti Vihar, Burla.

4. Dharmatma Nand. *Uttar Pradesh sarkar ke vitt ka ek adhyayan.* BHU. Prof. U.K. Mehra.

5. Guleria, Amar Singh. *An analysis of output and consumption of trade in wood products in India.* HP.

6. Jai Bir Singh. *Input-output relationship in Haryana agriculture : A sample study of selected villages.* Kurukshetra.

7. Jain, P.M. *Agricultural production and productivity in Jalgaon District.* Vikram. Dr. A.K. Bhattacharya, Department of Economics, Vikram University, Ujjain.

8. Karjagaonkar, Alka. *Jansankhya vridhi par shiksha ka prabhav, Ujjain Jile ke sandarbh mein.* Vikram. Dr. (Mrs.) S. Murty, Department of Economics, Vikram University, Ujjain.

9. Nadkarni, Shivani. *Economics of chemical industry in Madhya Pradesh.* Devi Ahilya.

10. Pandey, Sheonandan. *Comparative agricultural development in India and China since FFYP.* Meerut. Dr. R.P. Tyagi, Department of Economics, M.M.H. College, Ghaziabad.

11. Sontakki, C.N. *The problems of cottage powerloom industry in Belgaum District.* Bombay. Dr. B.R. Rairikar, Principal, (Retd.), Lala Lajpatrai College of Commerce, Bombay.

12. Swarn Lata. *A study of dynamics of interrelationships of crop and dairy enterprises in agrarian sector in Haryana State.* Kurukshetra.

Law

1. Gupta, Raj Kumar. *Fiscal imbalance between the centre and the states under the Indian Constitution.* Kurukshetra.

2. Nakade, Shivraj Bashettiappa. *National emergency under the Indian Constitution.* Marathwada. Prof. J.K. Mittal, Research Prof. Indian Law Institute, Bhagwandas, Road, New Delhi.

Public Administration

1. Khare, Brij Bhushan Lal. *Human resource development in civil services : A study of IAS.* Panjab.

Military Studies

1. Singh, Janak Singh. *Yudh mein Bharatiya shasakt senaon ka yogdan.* Bundelkhand. Dr. O.P. Singh, Head, Department of Military Studies, Attara College, Attara.

Education

1. Agarwal, Neeraj Mohini. *Role of sex in dynamics of class room teaching behaviour flow patterns.* Meerut. Dr. R.A. Sharma, Prof. and Dean, Department of Education, Meerut University, Meerut.

2. Bahuguna, Ramesh Chandra. *A comparative study of correspondence and formal education.* Meerut. Dr. R. N. Agarwal, Department of Education, Meerut College, Meerut.

3. Bhardwaj, Ram Prakash. *Standardization of a comprehensive diagnostic test and preparation of remedial material in Mathematics for middle standard students of Haryana.* Kurukshetra.

4. Bhatt, P.N. *A comparative study of the effectiveness of three different modes of teaching selected topics of science on the achievement of the students.* Saurashtra. Dr. S. J. Bhavsar.

5. Harihar Singh. *Effective teaching strategies used for preparing examinations as perceived by the students.* Meerut. Dr. R.A. Sharma, Prof. and Head, Department of Education, Meerut University, Meerut.

6. Joshi, Anuradha. *Evolvement of an instructional strategy for teaching elements of science to class IX students of M.P. State.* Devi Ahilya.

7. Rajender Singh. *Adult education, training and productivity : A study of workers in Haryana.* Kurukshetra.

8. Rashmi. *To study the relative effectiveness of taped programme and guided discovery methods of teaching Mathematics in elementary classes.* Meerut. Prof. O.S. Dewal, Prof. and Head, Department of Education, Central Institute of Educational Training, New Delhi and Dr. R.N. Aggarwal, Department of Education, Meerut College, Meerut.

9. Vyas, S. G. *Construction and standardisation of the Hindi language ability test for the entrants to the standard eleven (general stream) of higher secondary schools of Saurashtra Region.* Bhavnagar. Dr. M D. Trivedi.

Commerce

1. Agarwal, Vinod Kumar. *Analysis of financial statements of sugar mill companies in Meerut Division since 1971.* Meerut. Dr. R.C. Mittal, Principal (Retd), Meerut College, Meerut.

2. Fulzela, Rajendra Sitaramji. *A study of the economic condition of scheduled castes engaged in trade and commerce within the Nagpur Corporation Area during the period 1961 to 1981, with special reference to Mahar and New Buddhist.* Nagpur. Dr. V.S. Shenwai, S.P. City College, Nagpur.

3. Garg, Ram Kumar. *Impact of State Fnancial Corporations on the growth of small scale industries in India : A case study of Haryana Fnancial Corporation, 1967 to 1983.* Meerut. Dr. R.K. Jain, Head, Department of Commerce, J.V. Jain College, Saharanpur.

4. Jain, Mukesh Chand. *Problems and prospects of forest based industries in Uttar Pradesh : Case studies of WIMCO and the Indian Turpentine and Rosin, Co. Ltd., Bareilly.* Meerut. Dr. Nanak Chand, Department of Commerce, M.M. College, Modinagar.

5. Khandelwal, R.S. *Analysis of capital structure in paper industry of India.* Saurashtra. Dr. N.M. Khandelwal.

6. Misra, Banarasi. *Monitoring of industrial sickness of corporate enterprises in India.* BHU. Dr. R. M. Pandey, Reader, Department of Commerce, Banaras Hindu University, Varanasi.

7. Mittal, Jitendra Kumar. *Analysis of financial statements of cement industry in India.* Meerut. Dr. K.K. Sharma, Ex-Principal, Meerut College, Meerut.

8. Ray, Pinakiranjan. *Cattle depreciation conceptual propriety and treatment in farm accounting.* Calcutta.

9. Sharma, Bhuvnesh Chandra. *Material management in Jammu and Kashmir Road Transport Corporation.* Jammu. Dr. N.S. Gupta, Prof. and Head, Department of Commerce, University of Jammu, Jammu and Dr. L.C. Khullar, Reader, Department of Commerce, University of Jammu, Jammu.

10. Sharma, Narayan. *Analysis of the problems of lapse in the Life Insurance Corporation of India.* BHU. Dr. M.N. Mishra, Reader, Department of Commerce, Banaras Hindu University, Varanasi.

11. Singh, Kapil Dev. *Working capital management in public enterprises in India : A case study.* BHU. Dr. K.M. Pandey, Reader, Department of Commerce, Banaras Hindu University, Varanasi.

12. Singhal, Jagdish Prasad. *Role of State Bank of India in agricultural finance.* Meerut. Dr. J.D. Jain, Department of Commerce, J.V. Jain College, Saharanpur.

13. Subey Singh. *A critical study of the working of Primary Co-operative Credit societies in Haryana.* Meerut. Dr. M.L. Agarwal, Department of Commerce, D.N. College, Meerut.

14. Tare, Asha. *Credit policy of the commercial banks in India.* BHU. Prof. R.A. Singh, Head, Department of Commerce, Banaras Hindu University, Varanasi.

15. Upadhyay, Shailendra Kr. *Recent trends in India's export trade.* BHU. Dr. B. Jha.

16. Yadava, D.R. *Marketing and price spread of food grains in Meerut Region with special reference to wheat, maize and paddy.* Meerut. Dr. M.L. Agarwal, Department of Commerce, D.N. College, Meerut.

Home Science

1. Nighat Ara. *Immunization status of children in Varonasi and Srinagar : Innovation of some simple education material for the improvement of the immunization status of children in both the study areas.* BHU. Prof. (Mrs) A. Shukla, Head, Department of Home Science, Banaras Hindu University, Varanasi.

2. Saraf, Neela Prafulla. *Comparative study of unemployed and employed home makers of rural and urban areas with regard to paid help (in home making).* Nagpur. Dr. (Mrs) Kshama Limaye, Department of Home Science, S.B. Mahila Mahavidyalaya, Nagpur.

Business Management

1. Harish Kumar. *Management information system : A case study of O.N.G.C.* Rajasthan. Dr. R.B. Upadhyaya, Vice-Chancellor, Ajmer University, Ajmer.

Gurukula Kangri Vishwavidyalaya, Hardwar

(DEEMED UNIVERSITY)

UGC JUNIOR RESEARCH FELLOWSHIP 1988-99

NOTIFICATION

Applications on prescribed form are invited for the award of Junior Research Fellowship in Humanities and Science of Rs. 1800/- p.m. for the first and second years and Rs. 2100/- p m. for subsequent years with a contingency grant of Rs. 5000/- per annum from those candidates who have qualified in the National Educational Test conducted by University Grants Commission or Jointly by U.G.C. and CSIR for registration in Ph.D. in the following subjects :—

1. Vedic Literature 2. Sanskrit Literature 3. Hindi Literature 4. Ancient Indian History, Culture and Archaeology 5. Philosophy 6. Psychology 7. English Literature 8. Mathematics 9. Botany 10. Zoology.

The J.R.F. so awarded are tenable only at this Vishwavidyalaya and the awardee under the scheme is required to do full time research work under the guide approved in the department concerned of this Vishwavidyalaya. The terms and conditions of the award will be as per U.G.C. rules.

Applications completed in all respects should reach the undersigned on or before **31st August, 1988.** The prescribed application form and booklet of Ph.D. rules may be obtained personally on payment of Rs. 10/- or by sending M.O./Crossed Bank Draft for Rs. 15/- payable to the Registrar Gurukula Kangri Vishwavidyalaya, Hardwar.

Female candidates need not apply for registration to Ph.D. in Botany and Zoology.

Dr. Virendra Arora
REGISTRAR

Ministry of Human Resource Development

Department of Education

Applications are invited in the prescribed format from Indian nationals for the award of Commonwealth Scholarships tenable from October, 1989 for higher studies/research/training in the subjects mentioned below in the United Kingdom (72 nominations), Canada (24 nominations), Hong Kong (3 nominations), Nigeria (2 nominations) and Trinidad & Tobago (1 nomination).

Value: Scholarships cover tourist-class air-passage (both ways) adequate maintenance and other allowances.

Age: Candidates should be below 34 years of age as on 1.10 1988. Preference will, however, be given to candidates who are below the age of 30 years. The upper age limit is, however, relaxable by two years in the cases of SC/ST candidates. (For all the countries).

(A) Medicine (for U.K. only): Cancer Research (including Cancer Epidemiology); Cardiology; Gynaecology and Neurosurgery.

(B) Engineering & Technology: Computer Studies including Information Technology, Word Processing, Data Processing and Micro-Electronics Applications; Electronics; Environmental Science and Engineering; Ocean Engineering: Paper Technology; Remote Sensing Technology; Communication Engineering including Satellite Communication, Optical Fibre Communication and Digital Communication; Bio-Technology (Genetic Engg./Genetic Manipulation); Instrumentation/Process Controls related to Petro-chemicals including Micro-Processor Technology; Robotics-very large scale integration/Artificial Intelligence and Quality/Reliability Engineering.

(C) Science (Pure and Applied): Biochemistry; Computer Science; Mathematics; Molecular Biology: Microbiology and Physics (Solid State/Plasma).

(D) Agriculture and Allied Fields: Animal Husbandry; Agronomy; Food Technoloy; Forest Economics and Horticulture.

(E) Humanities & Social Sciences: Anthropology (Physical/Social); Archaeology; Economics; Education/Pedagogy; English Language & Literature; Fire Arts (includes Western Painting, Art History, Graphic Design and Sculpture); History; Library Science; Museology; Philosophy; Scientific Conservation; Sociology; *Political Science, *Mass Communication (*only for Canada); and Psychology.

Minimum Qualifications and Experience required :

Medicine: MD/MS MDS in the subject field selected should have atleast 60% marks at either Bachelor's or Master's degree level with two years continuous experience thereafter as on 1.10.1988. Scholarships are only for specified training in higher techniques and methodology that are project-oriented. These are not for generalised training or for studies/training leading to degree or diploma.

(B) Engineering and Technology : First class Master's degree in Engineering/Technology in the subject field selected or a related field with two years continuous experience thereafter as on 1.10.1988, excepting Paper Technology. Candidates who have been Science students and wish to apply under this group, must also have Master's degree in Engineering/Technology with two years continuous experience.

Exceptions to the qualifications: PAPER TECHNOLOGY: Master's degree in Engineering/Master's degree in Chemistry/Bachelor of Engineering (Pulp & Paper)/University Diploma in Pulp & Paper with two years/4 years/3½ years and 5 years experience respectively in the related field.

(C) Science (Pure & Applied): First class Master's degree in the subject field selected or in a related field with two years continuous experience thereafter as on 1.10.1988.

(D) Agriculture & Allied Fields: First class Master's degree in the subject field selected or in a related field with continuous two years experience thereafter as on 1.10.1988.

(E) Humanities & Social Sciences: First class Master's degree in the subject field selected or in a related field with two years continuous experience thereafter as on 1.10.1988 with the exception of subjects mentioned below:

Exceptions to the qualifications : (a) ARCHAEOLOGY: The degree should be in Ancient/Medieval History/Archaeology. (b) HISTORY (NON-INDIAN): Specialization in European History is essential preferably with knowledge of a major European language other than English. (c) MUSEOLOGY: Master's degree with a Diploma in Museology or should have worked in any Museum in a Curatorial Assignment. (d) SCIENTIFIC CONSERVATION: Master's degree in Chemistry/Bachelor's degree in Civil Engineering with Chemical/Structural/Preservation as field of specialisation. (e) FINE ARTS: 5 years National Diploma in Fine Arts from a recognised Institution/University Preference, however, will be given to the candidates possessing Master's degree in Fine Arts/History of Art. Five black and white/coloured slides may be attached with the application.

HONG KONG (3)

Subject-Fields: Chinese Language, Chinese History (Knowledge of Chinese language is essential).

Minimum Qualifications and Experience required: Master's degree in the subject selected with continuous two years experience thereafter as on 1.10.1988.

NIGERIA (2)

Subject-Fields: Forest Economics.

Minimum Qualifications and Experience required: First class Master's degree in the subject field or related field with continuous two years experience thereafter as on 1.10.1988.

TRINIDAD & TOBAGO(1):

Subject-Field: Tropical Agriculture (including Horticulture).

Minimum Qualifications and Experience required: First class Master's degree in the subject field with two years experience thereafter as on 1.10.1988.

Other Essential Qualifications: 1. The experience specified would be calculated from the date of acquiring the minimum qualifications. 2. Preference would be given to candidates who already hold a job and are sponsored with the assurance from their employers that they would be absorbed on their return from abroad. 3. No objection certificate from the Employer has to accompany the application from employed candidates.

Last date for the submission of applications : Applications on plain paper in the prescribed format alongwith the required documents (Photo, IPO and attested copy of the certificates/degrees/diplomas) should rcach **the E.S. 4 Section, Room No. 517 'B' Wing, Shastri Bhavan, New Delhi-110001 latest by 26th August, 1988.**

Important Instructions: ● There is keen competition for these scholarships which are also not awarded subject-wise. Candidate should submit only one application against the subject of his choice. ● Candidates, who have already appeared for interview thrice under the scheme, are not eligible to apply. ● Interview letters in a particular subject are sent only to the best candidates in order of merit after their applications are judged by a duly constituted Selection Committee of Experts. ● The country against which the candidate wishes to be considered should be indicated clearly on the top of the application. However, the selected candidates may be nominated for another country according to administrative convenience. ● Application must be accompanied by attested copies of certificate of age, mark-sheets of the qualifying examination and all the Degrees/Diplomas/Certificates. ● Candidates already holding Ph.D. Degree may be considered for UK only in very exceptional cases for Post-Doctoral Research. ● Equivalent foreign Degrees and Diplomas are acceptable. ● Candidates who have already been abroad for Studies/training/specialization either on scholarship or on their own, are eligible to apply only if they have been in India for at least 3 consecutive years after returning from abroad. ● Candidates who are at present abroad are not eligible to apply. ● In case of candidates qualifying from Universities/Institutions which do not give class or Division, requirements in lieu of 1st class would be 60% marks. Where grades are aWarded, the candidates are required to furnish exact percentage of marks and indicate the conversion formula. ● In case the IPO is enclosed with the Advance Copy, it is not necessary to enclose the same again, but the applications received without IPO will be incomplete and not be considered (Postal orders issued only after the Date on which the Advertisment was Published in the News Papers will be Accepted). ● Candidates should have adequate knowledge of geographical situation, culture and heritage of India and donor country. ● Only candidates who are having throughout good academic record should apply. ● Passport size photograph indicating the name of the candidate in ink in capital letters be pasted at the appropriate place on the application form. Without photograph application will be considered incomplete. ● The application sent through Employer will be accepted within 15 days from the last date prescribed for the receipt of applications. ● Sponsored candidates, who are finally selected, would have to produce a letter from their Employers that they would grant sufficient leave to cover the programme of study/training (normally two years required for Master's degree and 3 years for Ph.D. and 5 years for both Master's degree plus Ph.D. maximum). ● Candidates belonging to All India Services, like Indian Forest Service should send their applications through their Cadre Controlling Ministry. No action will be taken on the advance copies received from them direct. ● Canvassing in any form will be a disqualification. ● In case no interview letter is received by a candidate by the 31st December, 1988, it may be presumed that he/she has not been found fit for being called for interview. No further correspondence in this regard will be entertained.

Note : (Before filling up the application, candidates are advised to go through the instructions carefully).

PROFORMA FOR APPLICATION

1. Name of the Scholarship Scheme : Commonwealth Scholarship/Fellowship Plan Offer of Scholarships from Govts. of U.K./ Canada/Trinidad & Tobago/Hong Kong/ Nigeria.
2. (a) Subject (b) Sub-subject

Recent passort size photograph duty signed in block capitals to be pasted here. Without photograhp appln, will be considered incomplete.

3. (i) Name of candidate : (in block letters), with full mailing address. Shri/Smt./Kum.

   (ii) Marital status :
4. Date of birth and the State to which the candidate belongs.
5. Whether a member of SC/ST or a tribal or aboriginal or aboriginal community ? If so, give full particulars (Enclose certificate duly signed by 1st Class Magistrate).
6. Academic record starting from High School/ Higher Secondary (Attested/Photostat copies of Certificates to be attached).

Name of the University/ Board/ Inst.	Examinations passed	Year of Passing	Division/ Class with Position if any.*	Percentage of marks obtained and position, if any.	Subject taken.

*(in case no division/class is awarded and only grading is done the conversion formula adopted may be mentioned.)

7. Details of Professional/Practical Training and Research Experience, specifying the period and number of papers published, previous employment with name and date of employment, if any.
8. Nature of the present employment with date of appointment, designation and the name & address of the employer.
9. Names, designations and addresses of three referees who are familiar with the work of the scholar.

N.B. : Candidates called for interview will have to bring with them the comments of all three referees.

10. Have you been abroad ? If so, give full particulars of the country and the period. Also mention the year of return to India.
11. Proposed Programme of Study/Research/training, specifying.

    (i) the work at present engaged in;

    (ii) nature and programme of study/research/ training desired;

    (iii) future plans/prospects after the proposed studies/research/training, and

    (iv) how are these related to the technical or economic development of India.
12. Crossed Postal Order of Rs. 5.00 (Rs. 1.25 in case of SC/ST candidates, etc.) payable to the Secretary, Ministry of Human Resource Development (Department of Education), New Delhi may be attached with the form.
13. Whether you have already appeared for interview under this scheme during last three years. If so, give details :

    Indicate subject & year when you appeared for interview.

1	2	3
Subject/ Year	Subject/ Year	Subject/ Year

Place... Date... Signature of the Candidate

NOTE : Employed persons must send their applications fully sponsored by the employers. However, advance applications if they are complete in all respects (Photo, IPO and copies of the certificates) will be considered provisionally subject to the stipulation that applications through proper channel should reach the Section Officer, E.S. 4 Section not later than 15 days after the closing date for receiving applications.

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Council of Scientific and Industrial Research

Senior Research Fellowship / Research Associateship

(Advertisement No. SRF/RA-EMR-1/88)

Applications are invited from Indian Nationals by the Council of Scientific and Industrial Research, New Delhi for the award of CSIR Senior Research Fellowship/Research Associateship in all the subjects of Science and Technology including Engineering and Medicine tenable at Universities, Institutes of Technology, Medical Colleges/Institutes, Centres of Advanced Study, CSIR Laboratories, and other Research/Academic Institutions. Preference will be given to the topics relevant to R & D programmes of CSIR Laboratories, new and emerging fields in each scientific discipline and areas of national importance of Science and Technology. Good academic record at the University level, research papers published in standard journals and the topic and scope of research to be undertaken will be the main criteria for selection. The fellowship/associateship will be subject to CSIR Terms and Conditions applicable from time to time.

Senior Research Fellowship in Science Subjects

(Stipend Rs. 2100/- p.m.)

Qualification : Applicants should have first class M.Sc. or equivalent degree with at least 2 years research experience after M.Sc. and published/accepted papers in standard journals. Those who have submitted their thesis for Ph.D may not apply for SRF.

Senior Research Fellowship in Engineering and Medicine

(Stipend Rs. 2400/- first two years and Rs. 2500/- p.m. subsequent years).

Qualification : Applicants should have M.E./M. Tech. in engineering or equivalent degree in Engineering and Technology or M.B.B.S. after completing one year internship.

Tenure : (i) The tenure of an SRF in Science subjects will be 2 years extendable by one year after assessment as per rules, provided Ph.D. thesis has not been submitted. (ii) The tenure of an SRF in Engineering and Medicine will be two years extendable by a period of one year after assessment as provided in rules. If considered necessary this period can be further extended by one year after assessment.

Age : The upper age limit for Senior Research Fellowship is 32 years as on 31.8.88 (relaxable by three years for Scheduled Caste and Scheduled Tribe candidates). In exceptional cases where a candidate is found to have outstanding ability, the age limit may be relaxed marginally at the discertion of CSIR.

Selection will be made by high level Expert Committees in various disciplines on the basis of academic career and published/project work of the candidate.

Those who have held or are holding Senior Research Fellowship awarded under various schemes of all India grant giving agencies such as DST, UGC, ICMR, etc. may also apply but if selected they will be subject to the additional condition that their total tenure as SRF together with such tenure of fellowships held earlier shall not exceed 3 years in Science subjects and 4 years in Engineering/Medical subjects.

Research Associateship

Qualification : Applicants should have Ph.D. or equivalent degree (in a science subject) or M.D./M.S. (in Medical Sciences) or three years research, design and development experience after M.E./M.Tech. or equivalent degree in Engineering and Technology. Those who have submitted thesis for Ph.D. may apply for RA, but in the event of their selection award letter will be issued only on their producing documentary evidence of their Ph.D. degree.

Age : The upper age limit is 35 years as on 31.8.88 (relaxable by three years for Scheduled Caste and Scheduled Tribe candidates). Marginal relaxation in the period of R & D experience after M.E./M.Tech., and age relaxation upto a maximum of five years may be considered for candidates having outstanding ability, at the discretion of CSIR.

Stipend : The emolument of the Research Associates will be in one of the following four slabs and the stipend will be fixed depending on the recommendations of the Selection Committees.

Rs. 2200-100-2700
Rs. 2700-100-3200
Rs. 3200-100-3700
Rs. 3700-125-4325

Fresh Ph.D's will generally be placed in the grade of Rs. 2200-100-2700. However, stipends in higher grades may be offered to outstanding cases on the basis of merit and number of years of post doctoral research and publications.

Tenure : The tenure of the selected candidates will be for a period not exceeding five years.

CSIR reserves the right to place the selected candidates at any place considered suitable for work other than the place from where the application has been forwarded.

The selection would be made through interview by high level discipline wise Selection Committees from among the candidates recommended by the Screening Committee on the basis of academic career and published/project work of the candidate.

How to Apply : Application form for the fellowship/associateship may be obtained from the Under Secretary, EMR, CSIR Complex Building, Pusa, Dr. K.S. Krishnan Marg, New Delhi-110 012 with effect from August 1, 1988 personally or by post by sending a self addressed and duly stamped (Rs. 1.60) envelope of the size of 15 cm. × 25 cm. (5½''×9'').

The envelope must be superscribed with "Application Form for SRF OR RA : Science, Medical or Engineering." Application complete in all respects duly sponsored by the authorities of Institutes/Universities/Research Laboratories (where the candidate proposes to undertake research) alongwith copies of research papers, attested true copies of all relevant certificates, marksheets and testimonials (originals need not be sent) and a crossed Indian Postal Order of Rs. 20/- drawn in favour of **Jt. Secy. (A), CSIR** payable at New Delhi post office should be sent by Registered Post, addressed to **Under Secretary, EMR, CSIR Complex, Pusa, Dr. K.S. Krishnan Marg, New Delhi-110 012.** Scheduled caste/tribe candidates and physically handicapped candidates are exempt from payment of application fee. Last date for receipt of application is **31st August, 1988** (for remote areas **10 Sept., 1988).**

Check List and Summary Sheet must be sent with the Application. All the Papers of the Application must be stitched by thread or Tag before posting to keep them intact. The envelope containing the Application must be superscribed with "Application for SRF OR RA" as the case may be. No Application will be entertained after the expiry of last date. No interim enquiries will be attended to. Canvassing in any form will be a disqualification.

Spare Computer Time available on VAX 11/780 system consisting of 2MB primary memory, 512MB on line hard disk storage, two vaccum column 800/1600 BPI tape drives, 600 LPM line printer and seven VT 100 terminals. Concessional rates for students, academic institutions and Government organisations.

For further details please contact :

Director
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Govandi Station Road,
Deonar, Bombay-400088

MINISTRY OF DEFENCE

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Advertisement No. 017/RAC/88

The DRDO undertakes research and development projects for upgrading the technology to meet the multitudinous requirements of fighting forces of the country. Excellent career opportunities affording a challenging and rewarding work experience in different streams of disciplines exist. There are about 40 Laboratories/Establishments located all over the country equipped with the latest R & D facilities. Labs are lacated in Delhi, Bangalore, Hyderabad, Pune, Madras, Bombay, Dehradun, Cochin, Visakhapatnam, Balasore, etc.

Applications are invited for the following positions:-

Scientist 'F' (Rs. 5100-6300)—2 Posts

Item No. 1 (Terminal Ballistic Research Lab. Chandigarh)—1 post

Essential Qualifications : (i) At least second class Master's degree in Physics/Chemistry/Maths or Bachelor's degree in Engineering from a recognised University or equivalent. (ii) Ten years research, design or development experience in the area of armour defeating projectiles and their immunity profiles, performance evaluation of terminal ballistics and having knowledge of Physics or Chemistry of explosive/armour stores and special instrumentation required for ballistics/detonics studies of which two years should be in the capacity of senior scientist/R&D manager in a reputed R&D organisation. Desirable Qualifications: (i) Master's degree in Engineering or Doctorate degree in Physics/Chemistry/Maths.

Item No. 2 (Defence Research & Development Estt., Gwalior)—1 post

Essential Qualifications : (i) At least second class master's degree in Chemistry from a recognised university or equivalent. (ii) Ten years research and development experience in the synthesis and process development of Organophosphorus and other toxicological compounds having knowledge of instrumental/analytical techniques and detection/decontamination/protective measures of which two years should be in the capacity of a Senior Scientist/R&D Manager in a reputed Research and Development Organisation with proven R&D capabilities by way of Patents/Publications in reputed journals in the above mentioned areas. Desirable Qualifications: Doctorate degree in the relevant area.

Scientist 'E'—(Rs. 4500-5700) —3 posts

Item No. 3 (INMAS, DELHI)—1 post

Essential Qualifications : (i) At least second class Master's Degree in Organic/Pharmaceutical Chemistry /Bio-chemistry from a recognised university or equivalent. (ii) Ten years research and development experience in the area of Radiopharmaceuticals used in Nuclear Medicines. Desirable Qualifications: Doctorate Degree in the relavant field.

Item No. 4 (ATV, New Delhi)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Metallurgical/Mechnical Engineering from a recognised University or equivalent. (ii) Ten years research, design or development experience in multidisciplinary research, programmes involving shock vibration, stress analysis, reliability studies, material sciences and corrosion as evidenced by published work out of which two years should be in a responsible capacity. Desirable Qualifications : (i) Master's degree in Metallurgical/Mechanical Engineering.

Item No. 5 (Defence Research and Development Lab, Hyderabad)—1 post

Essential Qualifications: (i) At least second class Bachelor's degree in Electronics/Telecommunications/Electronics and Communications/Computer Engg. from a recognised university or equivalent. (ii) Ten years' research, design and development experience in developing computer-based Management Information System for R & D projects of which at least three years should be in a responsible position. Desirable Qualifications: (i) Master's degree in Electronics/Telecommunication/Electronics and Communication/Computer Engg. (ii) Experience in planning and commissioning of communication/computer systems.

Scientist 'D' (Rs. 3700-5000)—12 posts

Item No. 6 (DEBEL, Bangalore) —1 post

Essential Qualifications: (i) A Medical qualification in the First Schedule or the Second Schedule or part II of the Third Schedule to the Indian Medical Council Act 1956 (102 or 1956). Holders of Medical qualifications included in Part II of the said Third Schedule should also fulfil the conditions specified in sub-section (3) of Section 13 of the said Act (ii) Post Graduate Degree qualification in Aviation Medicine. (iii) Seven years practical and administrative experience in the field of Aviation Medicine.

Item No. 7 (Defence Electronics Research Laboratory, Hyderabad)—1 post

Essential Qualifications : (i) At least Bachelor's degree in Electrical/Communication Engineering. (ii) 8 years research/design/or development experience in the area of electronics Warfare and Radar Systems of which atleast five years should be in design, development and qualification of airborne EW systems including inviron-mental, dynamic load and flight testing. Desirable Qualifications: Master's/Doctorate degree in Electrical/Communication Engg.

Item No. 8 (Defence Electronics Research Laboratory, Hyderabad)—1 post

Essential Qualifications: (i) At least second class Bachelor's degree in Electronics Engg. from a recognised university or equivalent. (ii) Eight years research, design or development experience in the area of electronic warfare and radar systems. Desirable Qualifications: Master's Degree in Electronics Engg. with specialisation in Radar Engg.

Item No. 9 (Inst. of Nuclear Medicine and Allied Sciences, Delhi)—1 post

Essential Qualifications: (i) At least second class Master's degree in Physics/Biophysics from a recognised University or equivalent. (ii) Eight years research, design or development experience in the field of Nuclear Magnetic Resonnance Imaging and Spectroscopy of biological systems. Desirable Qualifications: (i) Doctorate degree in the relevant field. (ii) Proven ability to direct research in the above fields.

Item No. 10 (Interim Test Range, Balasore)—1 post

Essential Qualifications: (i) At least second class Bachelor's degree in Computer Science/Electronics Engineering. (ii) Eight years research, design or development experience of real time software on VAX 11/PDP-11, networking and system hardware maintenance. Desirable Qualifications: (i) Master's degree in Computer Science/Electronics Engineering. (ii) Experience on range software development and MIS Software development and personal computers/UNIX and 'C.'

Item No. 11 (Interim Test Range, Balasore)—1 post

Essential Qualifications: (i) At least second class Bachelor's degree in Instrumentation/Electrical/Electronics and Telecommunication Engg. from a recognised University or equivalent (ii) Eight Years' research, design or development experience in telemetry, telecommand and/or instrumentation and/or process control and/or data recording, acquisition and reduction. Desirable Qualifications: Master's degree in the relevant area.

Item No. 12 (Electronics Radar & Development Estt., Bangalore)—1 post

Essential Qualifications: (i) At least second class Bachelor's degree in Electronics/Electrical Engg. from a recognised University or equivalent. (ii) Eight years research, design or development experience in microwave transmitter systems, high voltage power supplies and control circuits and microwave measurement. Conversant with transfer of technology of the design to production agency. Desirable Qualifications: (i) Master's degree in the relevant area.

Item No. 13 (Defence Research & Development Lab., Hyderabad)—1 post

Essential Qualifications: (i) At least second class Bachelor's degree in Electronics and Communication Engg. from a recognised university or equivalent. (ii) Eight years research, design or development experience in the area of Array Processing Techniques in Radar, Navigation and Signal Processing. Desirable Qualifications: (i) Master's degree in the relevant area.

Item No. 14 (Defence Research & Development Lab., Hyderabad)—1 post

Essential Qualifications: (i) At least second class Master's degree in Mathematics/Physics from a recognised University or equivalent. (ii) Eight years research, design or development experience in Applied Mathematics/Theoretical Physics with knowledge of Scientific Programming/parallel computing/computational fluid Dynamics. Desirable Qualifications: (i) Doctorate degree in mathematics/Theoretical Physics (ii) Experience in using mainframe computers.

Item No. 15 (ATV, New Delhi)—1 post

Essential Qualifications: (i) At least second class Bachelor's degree in Metallurgical/Chemical Engineering from a recognised university or equivalent. (ii) Eight years research, design or development experience in dealing with Marine Metallurgy out of which at least 4 years experience in dealing with corrosion and its preventive measures. Desirable Qualifications: Master's degree in Metallurgical/Chemical Engineering with knowledge of CAD/MIS.

Item No. 16 (Naval Physical and Oceanographic Lab., Cochin)—1 post

Essential Qualifications : (i) At least second class Master's degree in Physics/Applied Physics or Bachelor's degree in Mechanical or Instrumentation Engg. from a recognised university or equivalent. (ii) Eight years research, design or development experience in instrumentation and measurement system out of which two years should be in a responsible capacity involving organising/co-ordinating group activities. Desirable Qualifications : (i) Doctorate degree in Physics/Applied Physics or Master's degree in Mechanical/Instrumentation Engg.

Item No. 17 (Addl. Director of Aeronautics, Bangalore)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Mechanical/Aeronautical Engg. from a recognised university or equivalent. (ii) Eight years research, design or development experience in airworthiness/quality assurance of aircraft/gas turbine engines. Desirable Qualifications : (i) Master's degree in Mech./Aeronautical Engg.

Scientist 'C' (Rs. 3000-4500)—22 posts

Item 18 (Microwave Tube R & D Centre, Bangalore)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Electronics Engineering or Master's degree in Physics with specialisation in Electronics from a recognised University or equivalent. (ii) Four years research, design or development experience in the field of Microwave tubes/Microwave engineering. Desirable Qualifications : (i) Master's or Ph D. degree in the relevant field. (ii) Experience in Computer-Aided-Design and Simulation in the field of Microwave tubes/Microwave engineering.

Item No. 19 (Interim Test Range, Balasore)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Electronics/Electrical/Communication Engg. with specialisation in optical image processing from a recognised University or equivalent. (ii) Four years research, design or development experience in modern photo/image processing techniques/optical Imaging and interpretation. Desirable Qualifications : (i) Master's degree in Electronics/Electrical/Communication Engg. (ii) Experience in use of Cine/TV and high speed cameras and related equipment/processing.

Item No. 20 (Defence Electronics Application Lab., Dehradun)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Electronics & Communications Engineering/Telecommunications Engg. from a recognised University or equivalent (ii) Four years research, design or development experience in microwave/millimetric waves solid state circuits/sub-systems for communications/radar systems. Desirable Qualifications : (i) Master's degree in Telecommunications/Electronics & Communications Engineering. (ii)Knowledge or design/development of microwave/millimetric wave integrated circuits using computer software.

Item No. 21 (Air Force Training School, Jalahalli, Bangalore)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Electronics/Communication Engg. from a recognised university or equivalent. (ii) Four years research, design or development experience in digital Communication/Modern radar. Desirable Qualifications : (i) Doctorate degree in the relevant field. (ii) Candidates with experience in teaching will be preferred.

Item No. 22 (Addl. Director of Aero, Bangalore)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Aeronautical/Mechanical Engg. from a recognised university or equivalent. (ii) Four years research, design or development experience in the field of Aircraft Structures with special reference to use of composites and type certification of aircraft/Helicopter. Desirable Qualifications : Master's degree in Aeronautical/Mechanical Engineering.

Armament Research and Development Estt., Pune—3 posts

Item No. 23 : Essential Qualifications : (i) At least second class Bachelor's degree in Mechanical/Aeronautical engineering from a recognised university or equivalent. (ii) Four years research design or development experience in the field of configuration design of wind tunnel testing, post flight analysis, computational fluid dynamics. Desirable Qualifications : (i) Master's degree in Mech /Aero Engg

Item No. 24 : Essential Qualifications : (i) At least second class Bachelor's degree in Mechanical engineering from a recognised university or equivalent. (ii) Four years research, design or development experience in experimental stress analysis, vibrational analysis of externally excited systems and application of finite element technique for stress analysis. Desirable Qualifications : Master's degree in Mechanical engineering.

Item No. 25 : Essential Qualifications : (i) At least second class Bachelor's degree in Mechanical engineering from a recognised university or equivalent. (ii) Four years research, design or development experience in the field of complex mechanisms for high reliability/high speed automatic object handling and transfer systems. Thoroughly conversant with the kinematics and motion analysis of such mechanisms alongwith dynamics and force analysis required for strength calculations and material selection. Desirable Qualifications : (i) Master's degree in Mechanical Engineering. (ii) Knowledge of modern manufacturing and inspection methods of precision components.

Defence Metallurgical Research Lab. Hyderabad—2 posts

Item No. 26 : Essential Qualifications : (i) At least second class Bachelor's degree in Mechanical Engineering from a recognised university or equivalent. (ii) Four years research, design or development experience in application of finite element technique to engineering problems. Desirable Qualifications : Master's degree in Mechanical Engineering. (ii) Experience and publications in the field of dynamic fracture.

Item No. 27 : Essential Qualifications : At least second class Bachelor's degree in Chemical or Metallurgical Engineering. (ii) Four years experience in design/operation/maintenance of microprocessor based process control instrumentation for Chemical/Metallurgical plants. Desirable Qualifications (i) Master's degree in Chemical or Metallurgical engineering. (ii) Advanced studies in the areas of reaction engineering and process kinetics and transport phenomena.

Item No. 28 (ATV, New Delhi)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Computer Science from a recognised University or equivalent. (ii) Four years' research and development experience in system analysis and design in a research orgn. Desirable Qualifications : (i) Master's degree in Computer Science and knowledge of Computer Languages.

Institute of Nuclear Medicine and Allied Sciences, Delhi—4 posts

Item No. 29 : Essential Qualifications (i) At least second class Bachelor's degree in Life Sciences from a recognised University or equivalent. (ii) Four year's research and development experience in the field of molecular genetics/radiation genetics. Desirable Qualifications : (i) Doctorate degree in the relevant field. (ii) Experience in the field of cell and molecular biology and recombinant DNA techniques.

Item No. 30 : Essential Qualifications : (i) A medical qualification included in the First Schedule or the Second Schedule or Part II of the Third Schedule to the Indian Medical Council Act 1956 (102 of 1956). Holders of Medical qualifications included in Part II of the said Third Schedule should also fulfil the conditions specified in sub-section (3) of section 13 of the said Act. (ii) Post-graduate degree in Radiodiagnosis/Radiotherapy. (iii) Three years practical and administrative experience in the field of NMR imaging and spectroscopy.

Item No. 31 : Essential Qualifications : (i) At least second class Master's degree in Physics/Bio-Chemistry Physical Chemistry from a recognised University or equivalent. (ii) Four years' research and development experience in the field of molecular/cell Biology. Desirable Qualifications : (i) Doctorate degree in the relevant field. (ii) Experience in studies pertaining to Magnetic Resonance of Biological Systems.

Item No. 32 : Essential Qualifications : (i) A medical qualification included in the First Schedule or the Second Schedule or Part II of the Third Schedule to the Indian Medical Council Act 1956 (102 of 1956). Holders of Medical qualifications included in Part II of the said Third Schedule should also fulfil the conditions specified in Sub-section (3) of section 13 of the said Act. (ii) Post-graduate degree in Radiodiagnosis/Imaging/Diploma in Radiation Medicine. (iii) 3 years practical and administrative experience in the field of NMR imaging and spectroscopy.

Naval Chemical and Metallurgical Lab. Bombay—2 posts

Item No. 33 : Essential Qualifications : (i) At least second class Bachelor's degree in Mechanical/Metallurgical Engg. from recognised University or equivalent. (ii) Four years' research, design or development experience in the areas of solidification structure property correlation in cast irons and in the use of sophisticated equipment for micro-structural evaluations. Desirable Qualifications : (i) Master's degree in Metallurgy/Mechanical Engineering (ii) Published work in reputed journals in the above areas.

Item No. 34 : Essential Qualifications : (i) At least second class Master's degree in Chemistry with specialisation in Physical Chemistry from a recognised University or equivalent (ii) Four years research, design or development experience in the area of electrochemical corrosion with knowledge of instrumental analysis. Desirable Qualifications : (i) Doctorate in Chemistry in the relevant area.

Item No. 35 : (Resident Technical Office (H), Bangalore)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Aeronautical/mechanical Engg. from a recognised University or equivalent. (ii) Four years' research, design or development experience in the field of Aerodynamics and Aircraft design and type certification of Aircraft/Helicopter. Desirable Qualifications : Master's degree in Aeronautical/Mechanical Engg.

Item No. 36 (Resident Technical Office, Korwa)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Electronics/Electrical Engineering from a recognised University or equivalent. (ii) Four years' research, design or development experience in the field of avionics systems for military aircraft. Desirable Qualifications : Master's degree in Electronics/Electrical Engg.

Item No. 37 (Defence Electronics Research Lab, Hyderabad)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Electronics/Telecommunication Engineering from a recognised University or equivalent (ii) Four years' research, design or development experience in the field of Marine communication and Radar Equipments. Desirable Qualifications : (i) Master's degree in Electronics/Telecommunication Engg. (ii) Knowledge of Weapon-Control System/EW Equipments.

Item No. 38 (Defence Research & Development Estt., Gwalior)—1 post

Essential Qualifications: (i) At least second class Master's degree in Inorganic Chemistry from a recognised University or equivalent. (ii) Four years' research, design or development experience in the area of toxicological effects of heavy metals in the biological/environmental systems, with knowledge of instrumentation techniques related to genetic engineering. Desirable Qualifications : Doctorate degree in Chemistry.

Item No. 39 (Defence Scientific Information & Doc. Centre Cell, Hyd.)—1 post

Essential Qualifications (i) At least second class Master's degree in Science or Bachelor's degree in Engineering or Technology from a recognised university or equivalent (ii) Four years' research experience in production of scientific/technical publications in a Govt. organisation or a publishing firm of repute. Desirable Qualifications: (i) Experience in a supervisory capacity in a phototypesetting-cum-offsetting printing press, (ii) Diploma in Journalism from a recognised university/institution.

Item No. 39-A. Scientist 'C' (Solidstate Physics Laboratory, Delhi)—1 post

Essential Qualifications : (i) At least second class Master's Degree in Physics with specialisation in Electronics or Bachelor's Degree in Electronics Engineering from a recognised University or equivalent. (ii) Four years research & development experience in Semi-Conductors materials and devices. Desirable : Doctorate Degree in Physics or Master's Degree in Engineering in the relevant areas.

Scientist 'B' (2200-4000)—47 posts (UR—29, SC—9, ST—9)

Item No. 40 (Scientific Analysis Group, Delhi etc.) —5 posts (UR—3, Sc—1, ST—1)

Essential Qualifications : (i) At least second class Master's degree in Maths/Applied Maths/Statistics from a recognised university or equivalent. Desirable Qualifications : Doctorate degree in Maths/Applied Maths/Statistics.

Item No. 41 (Services Selection Boards)—9 posts (UR—5, SC—2, ST—2)

Essential Qualifications : (i) At least second class Master's degree in Psychology with specialisation in experimental/clinical psychology from a recognised university or equivalent. Desirable Qualifications : Doctorate degree in experiment/Clinical Psychology,

Item No. 42 (Def. Research Lab., Tezpur & Def. Lab. Jodhpur)—2 posts (UR)

Essential Qualifications : (i) At least second class Master's degree in Agriculture Science from a recognised university or equivalent. Desirable Qualifications : (i) Doctorate degree in Agriculture Science. (ii) Candidates with experience of working in temperate climate/high altitude and arid zones would be preferred.

Item No. 43 (Def. Research Lab., Tezpur & Def. Agriculture Lab., Almora)—2 posts (UR—1, ST—1)

Essential Qualifications : (i) At least second class Master's degree in Zoology with specialisation in Entomology/Cytogenetics from a recognised university or equivalent. Desirable Qualifications : (i) Doctorate degree in Entomology/Cytogenetics. (ii) Experience in working at high altitude /temperate climate.

Item No. 44 (Defence Research Lab., Tezpur)—1 post (UR)

Essential Qualifications : (i) At least second class Master's degree in Animal Husbandry/Veterinary Science from a recognised university or equivalent. Desirable Qualifications : (i) Doctorate degree in Animal Husbandry/Veterinary Science. (ii) Experience of working in the relevant field at high altitude.

Item No. 45 (Defence Research Lab, Tezpur)—1 post (SC)

Essential Qualifications : (i) At least second class Master's degree in Biochemistry from a recognised university or equivalent. Desirable Qualifications : (i) Doctorate degree in Biochemistry. (ii) Experience of working in the relevant field at high altitude.

Item No. 46 (Defence Lab., Jodhpur)—8 posts (UR—4, SC—2, ST—2)

Essential Qualifications : (i) At least second class Master's degree in Physics/Applied Physics/Instrumentation with specialisation in Infra red/remote sensing/solid state Physics from a recognised university or equivalent. Desirable Qualifications : Doctorate degree in Remote Sensing/Infra red/solid state Physics.

Item No. 47 (Naval Chem & Metallurgical Lab., Bombay & Terminal Ballistics Research Lab., Chandigarh)—2 posts (UR—1, ST—1)

Essential Qualifications : (i) At least second class Bachelor's degree in Chemical Engineering from a recognised university or equivalent. Desirable Qualifications : (i) Master's degree in Chemical Engineering. (ii) Experience in Process development / Reaction kinetics/Polymer Science and Technology.

Item No. 48 (Defence Metallurgical Research Lab/ Naval Chemical & Metallurgical Lab., Bombay) —4 posts (UR—2, SC—1, ST—1)

Essential Qualifications : (i) At least second class Bachelor's degree in Metallurgical Engineering or Master's degree in Material Science from a recognised university or equivalent. Desirable Qualifications : Master's degree in Metallurgical Engineering or Doctorate degree in Material Science.

Item No. 49 (Naval Chemical & Metallurgical Lab., Bombay)—1 post (UR)

Essential Qualifications : (i) At least second class Bachelor's degree in ceramics Engineering from a recognised university or equivalent. Desirable Qualifications : Master's degree in Ceramics Engineering.

Item No. 50 (Defence Lab., Jodhpur)—2 posts (UR)

Essential Qualifications : (i) At least second class Master's degree in Organic/Physical Chemistry from a recognised university or equivalent. Desirable Qualifications : Doctorate degree in the relevant fields.

Item No. 51 (INS, Lonavala)—2 posts (UR—1, ST—1)

Essential Qualifications : (i) At least second class Bachelor's degree in Mechanical Engineering from a recognised university or equivalent. Desirable Qualifications : (i) Master's or Doctorate degree in Mechanical Engineering (ii) Experience of teaching graduate classes in the above discipline.

Item No. 52—4 posts (UR—2, SC—1, ST—1)

Essential Qualifications : (i) At least second class Bachelor's degree in Engineering or Master's degree in Science from a recognised university or equivalent. (ii) Master of Business administration degree with specialisation in Personnel Management/Financial Management. Desirable Qualifications : Master's degree in Engg or Doctorate degree in Science.

Item No. 53—4 posts (UR)

Essential Qualifications : (i) A medical qualification included in the first Schedule or the Second Schedule or Part II of the Third Schedule to the Indian Medical Council Act 1956 (102 of 1956). Holders of Medical qualifications included in part II of the said Third Schedule should also fulfil the conditions specified in Sub-section (3) of section 13 of the said Act. (ii) Completion of compulsory rotating internship. Desirable Qualifications : Post Graduate degree in any specialisation or Diploma in radiation medicine.

Chief Construction Engineers (Rs. 5100-5700)—2 posts (Non-DRDS)

Item No' 54 (Directorate of Works, New Delhi)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Civil/Mechanical/Electrical Engineering/Architecture from a recognised university or equivalent. (ii) Twelve years experience in planning or execution of civil works. Desirable Qualifications : Experience in planning or execution of major timebound projects of Workshops/factories/Research Establishments.

Item No. 55 (Director of Estate)—1 post

Essential Qualifications : (i) At least second class Bachelor's degree in Civil/Electrical/Mechanical Engineering or Architecture from a recognised university or equivalent. (ii) Nine years experience in planning or execution of works (iii) Experience in planning/ execution of major time-bound projects of workshops/ Factories/Research Establishments OR Experience in Estate Management (i.e. encroachments, developments, usufructs and litigation etc); Provision of civic amenities for inhabited estates, arboriculture and environmental health, civic taxes etc. and expert knowledge of Land Acquisition Laws, Land valuation techniques, rules related to negotiated purchase/hiring of immovable property. Desirable Qualifications : Knowledge of Scales of accommodation, Budget monitoring and quantity surveying.

GENERAL CONDITIONS

1. **Posts at S. No. 21, 41 and 51** are outside DRDO but are encadred to Defence Research & Development Service (DRDS).

2. Posts of Chief Construction Engineers (at S. Nos. 54 & 55) are in DRDO but are encadred to Defence Research & Development Service (DRDS).

3. **Promotion Prospects**: DRDO offers exellent opportunities for career advancement as Scientist. Result-oriented motivated scientists can look forward to promotions to following grades of scientists :

(i) Scientist 'C' : Rs. 3000-4500, (ii) Scientist 'D' : Rs. 3700-5000, (iii) Scientist 'E' : Rs. 4500-5700, (iv) Scientist 'F' : Rs. 5100-6300, Scientist 'G' : Rs. 5900-7300.

4. **Age Limits** : (i) For Scientist 'B' : Not exceeding 28 years. (ii) For Scientist 'C' not exceeding 35 years, (iii) For Scientist 'D' not exceeding 45 years, (iv) For Scientist 'F' not exceeding 50 years. Age is relaxable by 5 years in case of Govt. servants and those belonging to Scheduled Caste and Scheduled Tribes communities Crucial date for determining age is 31 August, 1988.

5. **Method of applying**. Neatly type-written applications should be sent to Director, Recruitment & Assessment Centre, Lucknow Road, Timapur, Delhi-110007, preferably by Registered cover, superscribed "Application for the post of Scientist—" "Item No.—" on plain paper in the prescribed format (reproduced below) accompanied by a crossed non-refundable Postal Order of the value of Rs. 8/- drawn in favour of Senior Accounts Officer, Recruitment & Assessment Centre, DRDO, payable at New Delhi. There is no fee for SC/ST candidates. Last date of receipt of applications is **31 August, 1988.** In respect of candidates from Andaman & Nicobar Islands Lakshdweep and abroad, last date of receipt of applications **14 September,** 1988.

6. **Method of Selection :** A written test may be conducted for certain posts at selected places. No TA/DA would be admissible for this purpose. Persons called for interview would be reimbursed actual tain/bus fare by shortest route limited to second class rail fare from the normal place of residence to the place of interview.

7. Only Indian nationals need apply.

8. Candidates should send two self-addressed unstamped envelopes of 23 x 10 cms alongwith the application.

9. One copy of recent passport size photograph should be pasted on right hand corner of the first page of application.

10. Attested copies of certificates/testimonials should be attached to the application form. Self attested copies will be accepted. NO ORIGINALS SHOULD BE FORWARDED.

11. Candidates will have to produce original certificates at the time of interview.

12. Incomplete applications or those received late will be rejected and no correspondence would be entertained in this regard.

13. The prescribed Essential Qualifications are minimum and the mere possession of the same does not entitle candidates to be called for interview. Where the number of applications received in response to an advertisement is large and it will not be convenient or possible for the Recruitment & Assessment Centre (RAC) to interview all these candidates, the RAC may restrict the number of candidates for interview to a reasonable limit on the basis of Qualifications and Experience higher than the minimum prescribed in the Advertisement or by holding a Screening Test.

14. In case SC/ST candidates are not available in requisite number, general candidates will be considered for the posts reserved for SC/ST.

15. Candidates working in Government/Public Sector Undertakings/Autonomous Organisations must apply through proper channel. They shall not be Interviewed if they fail to produce a 'no objection' certificate from their Employer at the time of Interview.

16. Prescribed essential qualifications are the barest minimum and mere possession of the same does not entitle any candidate to be called for interview.

17. Candidates desirous of applying for more than one post may apply separately for posts indicating item No. of the posts.

18. Candidates on appointment will have the opportunity to carry out Ph.D. with external registration and may be sponsored for doing M. Tech.

19. Opportunities are also available for study leave for carrying out higher studies abroad.

20. DRDS Officers may be sponsored for training abroad.

21. Though initial place of posting is indicated against some of the posts, yet candidates have the liability to serve anywhere in India

22. Handwritten applications will not be entertained.

23. Number of posts against each item is tentative and may vary.

24. All extra sheets used by the candidates MUST be duly authenticated by them.

25. Knowledge of French, German, Russian, Japanese and Chinese is a desirable qualification for all posts.

CANVASSING IN ANY FORM WILL MEAN DISQUALIFICATION

…………PROFORMA APPLICATION…………

Application for the post of Scientist——Item No.——

1. Advertisement No. :
2. Item No. :
3. Details of Postal Order(s)
   No., Date and Amount :

Affix Passport
size
latest Photograph

4. Name in full (Shri/Smt/Km) (in block letters)

5. (a) Date of Birth (in Christian era in figures) :
(b) Age as on 31 Aug. 1988.

6. Nationality :

7. Marital Status :

8. Father's/Husband's name :

9. Address for correspondence :

10. Permanent Address (in block letters with pin code) :

11. Nearest Railway Station :

12. Whether belong to SC/ST (if yes, attach certificate) :

13. Educational Qualifications :

Sr. No.	Course Passed	University/ Institution Board	Year of Passing	Subject taken	Percentage of Marks (Attach attested copies)

*In chronological order from X Standard (SSLC/HS/HSC) onwards

14. Professional Training :

Organisation	Period		Details of Training
	From	To	

15. Employment Record :

Name & address of employer/	Period of service from to	Designation of the post held/Name of Estt.	Scale of pay of each post	Detailed description of work	Reason for leaving

16. Present Basic pay :

Total emoluments :

Salary expected :

17. Minimum joining time required :

18. Resume of research work/experience, if any :

19. Field of special interest :

20. Are you under any contractural obligations to serve Central/State Govt/Any other public sector undertaking or Autonomous body and if so the details.

21. Details of relatives already employed in DRDO :

Name of Relatives	Relationship	Lab/Estt in	Post Held

22. Have you applied for any post in DRDO during the past two years ? If yes, give particulars :

Sr.	No. and Date of Advt.	Name of Post Discipline	Date of Interview	Remarks

23. Any other information you may wish to add (Use separate sheet if necessary)

24. Declaration.

I declare that the foregoing information is correct and complete to the best of my knowledge and belief and nothing has been concealed/distored. If at any time, I am found to have concealed/distored any material information, my appointment shall be liable to summary termination without notice/compensation. I will, if and when required, take up duty in the discharge of government assignments anywhere in India.

Place : Signature of Candidate

Date :

—DAVP 88/288

PT. SUNDERLAL MEMORIAL DEGREE COLLEGE

(AFFILIATED TO THE UNIVERSITY OF KANPUR)

KANNAUJ

Wanted a lecturer in education in the Scale Rs. 2200-4000 on ad-hoc basis till 27-1-1989 (Likely to continue) or till an appointee of U.P. Higher Education Service Commission joins.

The application should reach the College office latest by 25-8-1988. The prescribed application form alongwith prescribed qualifications is available in the college office on payment of Rs. 21.00.

Dr. P.N. Tandon
SECRETARY

School of Correspondence Courses

Andhra University-Visakhapatnam-530 003

ADMISSION NOTIFICATION

Applications are invited from the candidates residing in India for admission into the following courses in the School of Correspondence Courses for the academic year 1988-89.

	COURSE	ELIGIBILITY
1.	Introductory Course (both English and Telugu medium). This course is offered to prepare the candidates for Entrance Examination to be held in June, 1989 for Liberalised admission into B.A./B.Com. courses without any formal academic qualification by supplying study material : 6 months duration.	No formal academic qualification is required. But the candidate should have completed 21 years of age by 1-7-1989.
2.	B.A. (both English and Telugu medium) with the combinations of Spl. English, Spl. Telugu, History, Economics, Politics, Public Administration, Sociology and Mathematics : 3 years duration.	Intermediate/P.U.C. or equivalent or pass in the Entrance Examination conducted by this School.
3.	B.Com. (both English and Telugu medium) : 3 years duration.	Intermediate/P.U.C. or equivalent or pass in the Entrance Examination conducted by this School.
4.	B.Sc. (English medium only) with the combination of Mathematics, Physics and Chemistry : 3 years duration.	Intermediate/P.U.C. or equivalent with Physical Sciences and Mathematics.
5.	M.A. Economics (English medium only) 2 years duration.	B.A. with Economics (Main or Ancillary).
6.	M.A. English Language and Literature : 2 years duration.	B.A./B.Sc./B.Com.
7.	M.A. Public Administration (English medium) : 2 years duration.	B.A. with Politics or Public Administration as Main or Ancillary or B.L. or B.G.L.
8.	M.Com. (English medium only). Specializations offered : Taxation, Banking, Accounts, Agricultural Economics and Co-operation : 2 years duration.	B.Com. only.
9.	Post-Graduate Diploma in Co-operation and Rural Studies (English medium only) : 1 year duration.	B.A. (Economics as Main or Ancillary)/B.Com./B.Sc. (Agriculture) for inservice candidates working in Cooperatives and allied institutions including non-officials. OR B.A./B.Com./B.Sc. for permanent employees of Co-operatives who have put in more than 5 years of service, subject to production of a certificate of employment countersigned by the concerned Deputy Registrar of Co-operatives.

Applications will be issued from 8.8.1988. Filled-in applications should reach the undersigned on or before **30-9-1988.**

Intending candidates may write to the undersigned by **Designation** for application form and prospectus by sending Rs. 10/- by Demand Draft/Money Order in favour of the Director, School of Correspondence Courses, Andhra University, Waltair-530 003. The candidates may also remit cash at the CASH COUNTER of the School of Correspondence Courses towards application form and Prospectus. **Postal Orders and Cheques will not be accepted.**

The Admission Application Forms and Prospectus are also available at our following Study Centres on payment of Rs. 10/- through Demand Draft drawn in favour of the Director, School of Correspondence Courses, Andhra University, Waltair-530 003 :

1. Government College, Srikakulam, 2. M.R. College, Vizianagarm, 3. Mrs. A.V.N. College, Visakhapatnam, 4. Government College, Rajahmundry, 5. P.R. Government College, Kakinada, 6. Sir C.R. Reddy College, Eluru, 7. S.R.R. & C.V.R. Govt. College, Vijayawada, and 8. A.C. College, Guntur.

The School has no agents and takes no responsibility for the prospectus issued and promises made for admission by any other institutions.

Special Note for the successful candidates in B.A./B.Com. Entrance Examination of June, 1988.

All the successful candidates in the B.A./B.Com Entrance Examinations held in June, 1988 need not apply for the admission application form and prospectus for admission into 1st year degree course. The School will arrange to send the admission application form and prospectus along with the Marks Statements-cum-Eligibility Certificate to such candidates. They have to pay an amount of Rs. 10/- towards the cost of admission application form and prospectus along with the prescribed tuition fee at the time of admission. However, the duly filled-in admission application form along with the necessary enclosures including Demand Draft/M.O. receipt towards prescribed fee should reach the School of Correspondence Courses on or before the prescribed last date.

Prof. V. Abraham
DIRECTOR

CLASSIFIED ADVERTISEMENTS

BHARATHIAR UNIVERSITY
COIMBATORE - 641 046

Advertisement No. 1725/B5/88-89

Dated : 28th July 88

Applications are invited for the following posts :

I. Department of Computer Science

1. **Reader** 2 (OC-1 SC/ST-1)

Qualification & Experience

(A) consistently good academic record.

(B) A Ph. D from an Indian or a Foreign University in Computer Science OR Computer Applications Information Systems OR Engineering with specialisation in Computer Applications and Information Systems and 5 years of Teaching/Research Experience in the field of Computer Science or Computer Applications.

OR

M.E./M. Tech with Computer Specialisation or M.C.A. with 7 years of Teaching/Research Experience in the field of Computer Science or Computer Applications.

OR

M.E./M. Tech with specialisation in Applied Electronics or Electronics and Communication Engineering with 8 years of Teaching/Research Experience in the field of Computer Science or Computer Applications.

Candidates with research interest in Systems Support/DBMS/Experience in Software design would be preferred.

Maximum Age as on **1.7.88** : 45 years.

Scale of Pay

Rs. 1200-50-1300-60-1900 (U.G.C.) (likely to be revised)

2. **Systems Analyst** 1 (SC/ST)

Qualification & Experience

(A) A First Class M.E./M. Tech in Computer Specialisation/MCA with at least 1 year of proven experience in Business/Industrial software design, development and implementation.

OR

A First Class in M.E./M. Tech in Applied Electronics or Electronics and Communication Engg. with atleast 1 year of proven experience in Business/Industrial establishment in design and development of software.

OR

A First Class M.Sc. (Applied Mathematics) M.Sc. (Statistics) with at least Three years of proven experience in Business/Industrial software design, development, and implementation.

(B) Knowledge of FORTRAN, BASIC, COBOL, PASCAL essential and 'C' preferable.

Maximum Age as on **1.7.'88** : 40 years.

Scale of Pay

Rs. 700-40-1100-50-1600 (U.G.C.) (likely to be revised)

3. **Key Punch Operator/Systems Operator** : 2 (OC-1 SC/ST-1) :

Qualification & Experience

(A) A II class Bachelor's Degree

OR

Diploma in Engineering

OR

Diploma in Commercial Practice

(B) At least 6 months of experience in operation of main—frame/mini computer systems.

(C) Knowledge of typewriting, programming language and experience in HCL—System 4/HCL—HORIZON III preferable.

Maximum Age as on **1.7.'88** : 35 years.

Scale of Pay

Rs. 610-20-730-25-955-30-1075 (Tamil Nadu Govt. Scale of Pay).

In case SC/ST and BC candidates with suitable qualifications and experience are not available, other candidates will be considered against these vacancies as per Roster norms.

Any candidate applying for more than one post shall send separate application for each post.

Application form can be had from the Registrar, Bharathiar University, Coimbatore-641 046 on requisition accompanied by a self-addressed with Re. 1.40/- paise stamped envelope (25 cm x 10 cm). Name of the post for which the application is intended shall be specified in the requisition.

Attested copies of certificates showing qualification, age, experience, etc., should be sent along with the application in the prescribed form (in Eight copies) together with Registration fee of Rs. 10/- in the form of Crossed Indian Postal Order dated not earlier than 1.8.1988 drawn in favour of the Registrar, Bharathiar University, Coimbatore-641 046.

Candidates in service shall submit their application through proper channel. Completed applications should reach the Registrar on or before **5.9.1988.**

Incomplete applications and applications without the required registration fee will not be considered.

REGISTRAR

BHARATHIAR UNIVERSITY
COIMBATORE - 641 046

Advertisement No. 1301/B5/88-89

Dated : 28th July 1988

Bharathiar School of Management and Entrepreneur Development

Applications, in the prescribed form, are invited for the following posts in the Bharathiar School of Management and Entrepreneur Development, Bharathiar University, Coimbatore - 641 046.

Position	No. of Vacancies
Professor	1 (SC/ST)
Reader	2 (OC-1; SC/ST-1)
Lecturer	1 (OC-1)
Placement Officer	1 (OC-1)

Specialisations

Professor —Marketing

Reader —Finance and Accounting/Marketing

Lecturer —Finance and Accounting

Scale of Pay

Professor : Rs. 1500-60-1800-100-2000-125/2-2500

Reader/Placement Officer :
Rs. 1200-50-1300-60-1900

Lecturer : Rs. 700-40-1100-50-1600

(The scales of pay are likely to be revised as per the recommendations of the UGC and Government of Tamil Nadu).

Consultancy by faculty members will, be permitted subject to University Rules.

The Qualifications and Experience required in the various positions are given below.

Professor : A minimum of high second class (55% or above) post-graduate degree or a diploma recognised as equivalent thereto in the concerned or related subject from a reputed Indian or Foreign University/Institute with atleast 10 years of experience in teaching, research and/or in Management out of which not less than five years should be in a cadre not below that of a University Reader or an equivalent position. A doctorate or an equivalent degree will be an additional qualification.

Reader : A minimum of high second class (55% or above) post-graduate degree or a diploma recognised as equivalent thereto in the concerned or related subject from a reputed Indian or Foreign University/Institute with atleast 5 years in post-graduate teaching, research and/or Management, out of which not less than 3 years should be in a cadre not below that of a University lecturer. A Doctorate or an equivalent degree will be an additional Qualification.

Lecturer : A minimum of high second class (55% or above) post graduate degree or a diploma recognised as equivalent thereto in the concerned or related subject from a reputed Indian or Foreign University/Institute with not less than 2 years of post-graduate teaching/research experience. A Doctorate or an equivalent degree will be an additional qualification.

Placement Officer : Same as in the case of Reader. Additionally the candidate must be good at communication skills (both written and oral) and must have an aptitude for counselling the students for career development. Should be able to interact effectively with potential employers of MBA Graduates.

For the posts of Reader and Lecturer in Finance and Accounting, candidates with CA or ICWA will also be considered. Candidates may also be considered for posts other than that for which they have applied, if the University considers it necessary.

Maximum age as on 1.7. '88

Professor	: 50 Years
Reader/Placement Officer	: 45 Years
Lecturer	: 40 Years

In case SC/ST and BC candidates with suitable qualifications and experience are not available, other candidates will be considered against these vacancies, as per Roster norms.

Application forms can be had from the Registrar, Bharathiar University, Coimbatore - 641 046 on requisition accompanied by a self-addressed Rs. 1.40/- paise stamped envelope (25 cm x 10 cm). Attested copies of certificates showing qualifications, age, community, experience, etc., should be sent along with the application in the prescribed form (in Eight copies) together with Registration Fee of Rs. 10/- in the form of crossed Indian Postal Order dated not earlier than 1.8.'88 drawn in favour of the Registrar, Bharathiar University, Coimbatore - 641 046.

Any candidate applying for more than one post shall submit separate applications for each post.

Candidates in service shall submit their application through proper channel.

Completed applications should reach the Registrar on or before **5.9.1988.**

Incomplete applications and applications without the required registration fee will not be considered.

REGISTRAR

RAJASTHAN AGRICULTURE UNIVERSITY : BIKANER

CAMP-UDAIPUR

Advertisement No. 7/88

Dated : July 28, 1988

Applications are invited on prescribed applications form for the following posts in Teaching/Research Extension on regular basis in the University. The application form and **Full Details about Qualifications as Prescribed by the University** etc. can be obtained from Shri P.P. Mathur, Deputy Registrar, University Camp Office, Udaipur, Pin-313001 on Payment of Rs. 5/- through crossed Indian Postal Order payable to the "Comptroller, Rajasthan Agriculture University, Camp-Udaipur" alongwith a self-addressed envelope of 27 cms. × 12 cms. size bearing Postal Stamp of Rs. 2.20 only and send the application form duly completed in all respect to the Registrar, Rajasthan Agriculture University, Bikaner (Rajasthan) **upto 10th September, 1988.**

Those candidates who have already applied for these posts in response to previous advertisement Nos. 11/86 dated 27.12.1986, 1/87 dated 29.1.1987 and 3/87 dated 17.6.1987 issued from Sukhadia University, Udaipur and No. 2/87 dated 28.12.1987 and 2/88 dated 27.1.88 issued from Rajasthan Agri. University, Bikaner (Camp : Udaipur) need not to apply again but they should please send their fresh Bio-data (one side typed) on plain paper to update the same on the above address failing which their earlier applications will not be considered.

Professor : Pay Scale : Rs. 1500-60-1800-100-2000-125/2-2500 (Likely to be revised).

Faculty of Agriculture

1.	Agronomy	2
2.	Plant Breeding & Genetics	4
3.	Soil Science & Ag. Chemistry	1

4.	Animal Production	1
5.	Extension Education	1

Faculty of Vety. & Animal Science

1.	Director Research (Vety. & Animal Sc.)	1
2.	Associate Director (Vety. & Animal Sc.)	1
3.	Livestock Production Management	1
4.	Animal Nutrition	1
5.	Obstetrics & Gynaecology	1

Faculty of Agril. Engineering

1.	Soil & Water Conservation Engineering	1

Associate Professor : Pay Scale : Rs. 1200-50-1300-60-1900 (Likely to be Revised)

Faculty of Agriculture

1.	Agronomy	12
2.	Extension Eduction	4
3.	Entomology	2
4.	Bio-Chemistry	3
5.	Plant Physiology	1
6.	Plant Breeding & Genetics	3
7.	Plant Pathology	4
8.	Nematology	1
9.	Horticulture	2
10.	Soil Science & Ag. Chemistry	2
11.	Ag. Economics	1
12.	Agro. Forestry	2

Faculty of Home Science

1.	Child Development	1
2.	Home Management	1

Faculty of Vety. & Animal Science

1.	Animal Production	1
2.	Animal Breeding & Genetics	1
3.	Vety. Pathology	1
4.	Live-Stock Production & Management	1

Faculty of Agril. Engineering

1.	Farm Machinery & Power Engineering	1
2.	Soil & Water Conservation Engineering	2
3.	Electrical Engineering	1
4.	Mining Engineering	1

Assistant Professor : Pay Scale : Rs. 700-40-1100-50-1600 (likely to be Revised)

Faculty of Agriculture

1.	Agronomy	4
2.	Extension Education	5
3.	Plant Physiology	6
4.	Nematology	1
5.	Horticulture	5
6.	Bio Chemistry	2
7.	Limnology & Fisheries	1
8.	Agriculture Economics	5
9.	Agriculture Statistics	2
10.	Soil Science & Ag. Chemistry	5
11.	Plant Pathology	7
12.	Plant Breeding & Genetics	8
13.	Animal Production	5
14.	Entomology	1
15.	Agro-Forestry	1

Faculty of Dairy Science

1.	Dairy Technology	1
2.	Dairy Bacteriology	1

Faculty of Home Science

1.	Clothing & Textile	1
2.	Home Management	1

Faculty of Vety. & Animal Science

1.	Animal Breeding & Genetics	2
2.	Obstetrics & Gynaecology	2
3.	Vety. Medicine	3
4.	Livestock Production & Management	1

Faculty of Agriculture Engineering

1.	Electrical Engineering	1
2.	Mechanical Engineering	2
3.	Mining Engineering	1
4.	Givil Engineering	1
5.	Soil & Water Conservation Engineering	1
6.	Processing & Food Engineering	1
7.	Farm Machinery & Power Engineering	2
8.	System Engineer (Computer Application)	1
1.	Physics	1
2.	Mathematics	2
3.	Rural Sociology	1

General Note

1. Number of posts may be increased OR decreased.
2. Application forms received after the expiry of the last date may also be considered at the discretion of the Vice-Chancellor.
3. 16% posts would be reserved for Scheduled Caste and 12% for Scheduled Tribes, subject to general suitability.
4. A higher start in the grade may be considered for exceptionally qualified candidate.
5. The University Reserves the Right not to Fill up Post(s) Advertised.
6. Application forms can also be Obtained from the Office of the Registrar, Bikaner.

REGISTRAR

GATE-89
GRADUATE APTITUDE TEST IN ENGINEERING
A REQUIREMENT FOR ADMISSION TO
POST GRADUATE PROGRAMME

GATE-89 will be held on
SUNDAY, FEBRUARY, 12, 1989
Details will be announced in
October, 1988

ORGANISING INSTITUTE
INDIAN INSTITUTE OF TECHNOLOGY
KHARAGPUR

IPB

KONKAN KRISHI VIDYAPEETH

DAPOLI, DIST: RATNAGIRI

Advertisement No. KKV/EST/C/

Adv./XXV/11195/1988

Dated : 1st Aug. 1988

Applications in the prescribed form are invited for the undermentioned posts. Application forms can be obtained from the office of the Registrar, Konkan Krishi Vidyapeeth, Dapoli 415712, District : Ratnagiri, Maharashtra State on sending a self-addressed envelope (10 cms x 23 cms) affixing postage stamps of Re. 1/- and crossed Indian Postal Order worth Rs. 5/- (Rs. five only) payable to the Comptroller, Konkan Krishi Vidyapeeth, Dapoli, District : Ratnagiri. Completed applications accompanied by a crossed Indian Postal Order worth Rs. 10/- (Rs. ten only) payable to the Comptroller, Konkan Krishi Vidyapeeth, Dapoli, District : Ratnagiri should reach this office not later than **12-9-1988.** Government servants and the staff working under the local bodies should necessarily apply through proper channel and their applications should reach this office through their employer not later than 27-9-1988. Applications received after the due date will not be considered. A separate application with separate fee is required for each post.

(I) Office of the Vice-Chancellor

(1) Deputy Director of Research (Agri.) One post

(2) Medical Officer : One post

(3) Research Editor : One post

(II) Faculty of Agriculture

(A) Associate Professor and its equivalent

Agronomy discipline

(4) Associate Professor of Agronomy : Three posts (Reserved for SC/ST/DT & NT)

(5) Agronomist : One post

Horticulture discipline

(6) Horticulturist: One post

Agricultural Economics discipline

(7) Agricultural Economist : Two posts (One post reserved for SC/ST/DT & NT)

Agricultural Engineering discipline

(8) Agricultural Engineer : Two posts (One post reserved for SC/ST/DT & NT)

Agricultural Botany discipline

(9) Associate Professor of Agricultural Botany : Two posts (One post reserved for SC/ST/DT & NT)

Agricultural Chemistry and Soil Science discipline

(10) Soil Scientist : One post

(11) Associate Professor of Food Science and Nutrition. : One post

Plant Pathology discipline

(12) Pathologist : One post

Animal Husbandry and Dairy Science discipline

(13) Associate Professor of Animal Husbandry and Dairying : One post

(14) Scientist (Animal Nutrition) : One post

Agricultural Extension

(15) Scientist (Extension Education): One post (Reserved for SC/ST/DT & NT)

(B) Assistant Professor and its equivalent

Agronomy discipline

(16) Junior Meteorologist : One post Reserved for SC/ST/DT & NT)

Agricultural Chemistry and Soil Science discipline

(17) Biochemist : Two posts (One post Reserved for SC/ST/DT & NT)

Statistics discipline

(18) Junior Scientist (Statistics) : One post

(19) Assistant Statistician : One post (Reserved for SC/ST/DT & NT)

Animal Husbandry and Dairy Science discipline

(20) Assistant Professor of Veterinary Science : Two posts

Agricultural Engineering discipline

(21) Assistant Agricultural Engineer: One post (Reserved for SC/ST/DT & NT)

Horticulture discipline

(22) Assistant Professor of Horticulture: One post (Reserved for SC/ST/DT & NT)

Home Science

(23) Training Associate (Home Science) : One post (Reserved for SC/ST/DT & NT)

(C) Academic posts in the grade of Agricultural Officer/Agricultural Supervisor

(24) Agricultural Officer : Six posts (Four posts Reserved for SC/ST/DT & NT)

(25) Agricultural Supervisor : [Six posts (Four posts Reserved for SC/ST/DT & NT)

(III) Faculty of Veterinary Science

(A) Associate Professor

(26) Associate Professor of Poultry Science. : One post

(27) Associate Professor of Medicine: One post (Reserved for SC/ST/DT & NT)

(28) Associate Professor of Dairy Science : One post

(B) Assistant Professor and its equivalent

(29) Assistant Professor of Animal Husbandry : One post (Reserved for SC/ST/DT & NT)

(30) Assistant Professor of Physiology : One post (Reserved for SC/ST/DT & NT)

(31) Assistant Professor of Pathology: One post

(32) Assistant Professor of Bacteriology : One post

(33) Assistant Professor of Anatomy: One post

(34) Assistant Professor of Pharmacology : One post

(35) Assistant Professor of Food Science and Nutrition : One post

(36) Assistant Professor of Medicine: One post

(37) Gynaecologist : One post (Reserved for SC/ST/DT & NT)

(38) Assistant Director Incharge : One post (Reserved for SC/ST/DT & NT)

(39) Physician : One post

(40) Pathologist : One post (Reserved for SC/ST/DT & NT)

(C) Academic posts in the grade of Veterinary Officer

(41) Veterinary Officers and its equivalent : Eleven posts (Four posts Reserved for SC/ST/DT & NT)

(IV) Faculty of Fisheries Science

(A) Assistant Professor and its equivalent

(42) Assistant Professor of Fisheries Technology : Two posts (One post Reserved for SC/ST/DT & NT)

(43) Assistant Professor of Fisheries Engineering : One post

(44) Assistant Professor of Resources Economics and Statistics : Two posts

(45) Assistant Research Officer: Two posts (One post Reserved for SC/ST/DT & NT)

(B) Academic posts in the grade of Biologist/Biochemist/Senior Research Assistant/Junior Research Assistant/Gear Technician

(46) Biologist/Biochemist : Four posts (One Post Reserved for SC/ST/DT & NT)

(47) Senior Research Assistant : One post

(48) Junior Research Assistant : One post

(49) Gear Technician : One post

Pay Scale

(1) For the post at Sr. No. 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 26, 27 and 28 : Rs. 1200-50-1300-60-1900

(2) For the post at Sr. No. 16, 17, 18, 19, 20, 21, 22, 23, 29, 30, 31, 32, 33, 34, 35, 36, 42, 43, 44 and 45 : Rs. 700-40-1100-50-1600

(3) For the post at Sr. No. 3 : Rs. 700-40-1100-50-1300

(4) For the post at Sr. No. 37, 38, 39 and 40 : Rs. 680-40-1100-50-1250.

(5) For the post at Sr. No. 2 : Rs. 600-30-750-EB-40-1150

(6) For the post at Sr. No. 24 : Rs. 550-25-750-30-900.

(7) For the post at Sr. No. 41, 46, and 47 : Rs. 500-20-700-25-900.

(8) For the post at Sr. No. 25 : Rs. 395-15-500-20-700-Extn-20-800 (Higher starting of Rs. 410/- p.m. for Agricultural Graduate).

(9) For the post at Sr. No. 48 and 49 : Rs. 365-15-500-20-660-Extn-20-760.

Minimum Qualification for the posts

(a) For the post at Sr. No. 2.

Essential

(1) M.B.B.S. degree recognised by the Medical Council of India.

AND

(2) At least two years experience as a Registered Medical Practitioner.

Desirable

Postgraduate degree in Medicine/Surgery.

(b) For the post at Sr. No. 3

M. Sc. (Agri.) in Agricultural Extension with two years experience in Teaching/Research/Extension Education.

OR

Master's degree and two years experience in editing scientific report.

OR

Postgraduate degree/diploma in Agricultural journalism/journalism and two years experience of editing scientific reports.

(c) For the post at Sr. No. 1, 4 to 10, 12, 13, 14, 15, 26, 27, 28 :

(1) Ph. D. in respective subject with five years experience in teaching/research/extension education of which two years should be in the cadre of Assistant Professor or it's equivalent.

OR

Master's degree in respective subject with seven years experience in teaching/research/extension education of which three years experience should be in the cadre of Assistant Professor or it's equivalent.

(2) Evidence of published papers in recognised journals.

(d) For the post at Sr. No. 11

(1) Ph. D. in Food and Nutrition/Biochemistry with Nutrition/Food Science and Technology with five years experience in teaching/research/extension education of which two years should be in the cadre of Assistant Professor of Food Science and Nutrition.

OR

Master's degree in Food and Nutrition/Biochemistry with Nutrition/Food Science and Technology with seven years experience in teaching/research/extension education of which three years experience should be in the cadre of Assistant Professor of Food Science and Nutrition.

(2) Evidence of published papers in recognised journals.

(e) For the post at Sr. No. 16 to 23, 29 to 34, 36 to 40 :

(1) Ph. D. in respective subject preferred.

OR

Master's degree in the respective subject with two years experience in teaching/research/extension education.

(2) Evidence of published papers in recognised journals.

(f) For the post at Sr. No. 42 to 45

(1) Ph. D. in Fisheries Science/Zoology/Marine Biology with thesis on Fisheries or Marine Biological problems preferred.

OR

Master's degree in Fisheries Science/Zoology/Marine Biology with two years experience in teaching/research/extension.

(2) Evidence of published papers in recognised journals.

(g) For the post at Sr. No. 35

(1) Ph. D. in Food and Nutrition/Biochemistry with Nutrition/Food Science and Technology preferred.

OR

Master's degree in food and Nutrition/Biochemistry with Nutrition/Food Science and Technology with two years experience in teaching/research/extension education.

(h) For the post at Sr. No. 24, 41, 46, and 47 :

Master's degree in respective subject.

OR

Bachelor's degree in 1st class with distinction. Atleast 2nd class Bachelor's degree with three years' experience as Junior Research Assistant or it's equivalent.

(i) For the post at Sr. No. 25, 48 and 49

Bachelor's degree in the respective faculty.

Note

For the post at Sr. No. 49, the experience of Craft and Gear, preferably with actual experience of fishing will be preferred.

Note for Qualification

(a) For the posts at Sr. No. 1 and 10, the respective subject is Agricultural Chemistry and Soil Science.

(b) For the post at Sr. No. 14, the candidate should possess M.Sc./Ph. D. degree in Animal Nutrition in the branch of Agricultural Science.

(c) For the post at Sr. No. 15, respective subject is Agricultural Extension.

(d) For the post at Sr. No. 16, the respective subject is Agricultural Meteorology/Meteorology.

(e) For the post at Sr. No. 20, the respective subject means Ph.D./Master's degree in any branch of Veterinary Science.

(f) For the post at Sr. No. 29, the respective subject means Ph.D./M.V.Sc. in the subject to Dairy Cattle Production/Animal Breeding/Animal Genetics.

(g) For the post at Sr. No. 37, the respective subject is Animal Reproduction.

(h) For the posts at Sr. No. 38, 39, the respective subject is Medicine.

(i) For the post at Sr. No. 40, the respective subject is Veterinary Pathology/Bacteriology/Parasitology.

(j) Out of two posts at Sr. No. 8, respective subject for one post is "Soil and Water Conservation Engineering" and the respective subject for another post is "Irrigation and Drainage Engineering".

(k) For the post at Sr. No. 21, the respective subject is "Irrigation and Drainage Engineering".

Note

(1) Maximum age limit as on **12-9-1988** will ordinarily be 40 years for the post at Sr. No. 1, 4 to 15, 26, 27, 28 and 30 years for remaining posts. Maximum age limit is relaxable upto 5 years in deserving cases which will be at the discretion of the University. The age limit is not applicable to persons already employed in this University.

(2) Age relaxation for candidates belonging to SC/ST/DT and NT/OBC will be as per the Maharashtra State Government Rules.

(3) The pay scales of the above posts carry all allowances admissible as per the rules of the University.

(4) If response from highly qualified and more experience candidates is adequate, those with less qualifications or experience may not be called for interview eventhough they fulfil the minimum qualifications prescribed for the posts.

(5) The fact that the posts are advertised does not mean that all the posts will be filled in.

(6) The post at Sr. No, 1, 3, 5, 7, 8, 10, 12, 14, 15, 18, 23 and 35 are sanctioned by the Indian Council of Agricultural Research, for limited period.

(7) The number of posts may be increased or decreased.

(8) Selected candidates can be posted or transferred at any of the campus/centres under the jurisdiction of the University.

(9) Nomenclature of the posts can be changed by the University as and when need arises.

(10) Incomplete applications and applications received after the last date shall not be taken into consideration.

(11) The applicants should satisfy all the requirements such as qualification, experience etc. on or before **12.9.1988.**

(12) Mere eligibility does not rest any right on the candidates for being called for the interview.

Canvassing in any form will Completely Disqualify a Candidate for Employment under this University.

M.D. Ambre
REGISTRAR

DOCTOR HARISINGH GOUR VISHWAVIDYALAYA

SAGAR

Admission Notice for M.Phil. Course 1988-89

Applications are invited for admission to M. Phil. Course for the session 1988-89 in the prescribed form which may be obtained from Deputy Registrar (Administration Research Section) on payment of Rs. 5/- (Rupees five only) in the following subjects:— English, Hindi, Sanskrit, Ancient Indian History, History, Mathematics, Psychology, Political Science & Public Administration and Education. The academic qualifications for admission to M. Phil. Programme will be as under:

(i) A person who has passed Master's Degree Examination of this University or any other University recognised equivalent thereto, with at least Second Division shall be eligible for admission to M. Phil. Course.

(ii) A person will be admitted to the M. Phil. Course in the same subject which has been offered for this Master's Degree.

The last date for receipt of applications completed in all respect is **31.8.1988.**

R.N. Dhawan
REGISTRAR

OFFICE OF THE REGISTRAR DIBRUGARH UNIVERSITY

DIBRUGARH

ESTABLISHMENT BRANCH

Advertisement No. 7/88

Applications are invited for the following posts:

1. Reader in Physics : One post.
2. Reader in Chemistry : One post.
3. Reader in Statistics : One post.
4. Reader in Anthropology : One post
5. Reader in Life Science : One post.
6. Reader in Assamese : One post.
7. Reader in History : One post.
8. Reader in English : One post.
9. Reader in Pol. Science : One post.
10. Reader in Economics : One post.
11. Reader in Commerce : One post.
12. Reader in Sociology : One post.
13. Reader in Mathematics : Two posts.
14. Reader in App. Geology: Two posts.
15. Lecturer in Anthropology : One post.
16. Lecturer in Pol. Science : One post.
17. Lecturer in Economics : One post.
18. Lecturer in Sociology : One post.
19. Lecturer in Life Science: Two posts
20. Lecturer in Commerce : Two posts.

Scale of Pay

1. **Reader:** Rs. 1200-50-1300-60-1900/ p.m. (Unrevised)
2. **Lecturer:** Rs. 700-40-1100-50-1600/ p.m. (Unrevised)

All posts, carry usual allowances admissible under the University rules in force from time to time and the incumbents will be eligible for contributory provident fund and Gratuity on confirmation as per rule of the University.

Essential Qualifications

A. For Reader : (a) Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) Research (ii) Innovation in teaching methods or (iii) Production of teaching materials.

(b) At least five years experience of teaching or research provided that at least three years were as Lecturer or in equivalent position.

B. For Lecturer : (a) A Doctorate Degree or research work of an equally high standard: and

(b) Consistently good academic record with 1st or high 2nd Class (in the seven point scale) Master's Degree in a relevant subject or an equivalent degree of a foreign University. Having regard to the need for developing interdisciplinary programmes, the degree in (b) above may be in relevant subject.

Provided that if the selection committee is of the view that the research work of a candidate as evident either from his Thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (b) above.

Provided further that if a candidate having a Doctor's Degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record weightage being given to M. Phil or equivalent degree or research work of quality may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/Organisation on the condition that he will have to obtain a Doctor's Degree or give evidence of research work of equivalent high standard within eight years of appointment, failing which he will not be able to earn future increments until he fulfils those requirements.

Specialisation required:

1. **Reader in Physics** — One post
   - (i) Electronics.
   - (ii) Laser and optical physics.
   - (iii) Solid state physics.
2. **Reader in Chemistry** — One post
   Either i. Inorganic.
   or ii. Physical.
3. **Reader in Statistics** — One post
   - (i) Computer Science.
   - (ii) Industrial statistical quality control.
   - (iii) Mathematical programming.
   - (iv) Reliability.
4. **Reader in Anthropology** : One post.
   - (a) Basic Post-Graduate Degree in Anthropology with specialisations in pre-historic Archaeology/Palaeoanthropology/pre-history.

   OR

   - (b) Basic post-graduate degree in Anthropology with Research Degree or evidence of Research activities in the field of pre-historic Archaeology/Palaeo-anthropology/Prehistory.
5. **Reader in Life Science** : One post

   M. Sc. in Life Sciences or M.Sc. in Botany or in Zoology.

   Specialisation : Open,
6. **Reader in Assamese** : One post.

   M.A. in Assamese (Literature group) and/or Sanskrit (Kavya or literature group) and/or modern Indian literature with specialisation of comparative literature plus prescribed U.G.C. norms.
7. **Reader in History** : One post.
   Open.
8. **Reader in English** : One post.
   Open.
9. **Reader in Pol. Science** : One post.
   Open.
10. **Reader in Economics** : One post.
    Open.
11. **Reader in Commerce** : One post.
    Human Resource Management.
12. **Reader in Sociology** : One post.

    Urban Sociology/Sociology of Development.
13. **Reader in Mathematics** : Two posts.
    - 1 (One) post : Computer Programming/Numerical Analysis/Relativity.
    - 1 (One) post : Abstract Algebra/Topology/Differential Geometry.
14. **Reader in Applied Geology** : Two posts.

    Exploration Geophysics / Petroleum Geology/Mining Geology/Stratigraphy/Geostatistics and Geomathematics.
15. **Lecturer in Anthropology** : One post.
    - (a) In Advanced Social and Cultural Anthropology.

    or

    - (b) In physical Anthropology with a basic postgraduate degree in Anthropology.
16. **Lecturer in Pol. Science** : One post.
    Open
17. **Lecturer in Economics** : One post.

    Mathematical Economics and Econometrics.

    None should apply who did not have Mathematics as a subject and honours in Economics at the B.A./B.Sc. level.
18. **Lecturer in Sociology** : One post.
    Open.
19. **Lecturer in Life Sciences** : Two posts.
    - 1 (One) : M.Sc. in Life Sciences or M.Sc. in Zoology. Field of specialisation : Entomology.
    - 1 (One) : M.Sc in Life Sciences or in Botany. Field specialisation : Ecology.
20. **Lecturer in Commerce** : Two posts.
    - 1 (One) : Accountancy.
    - 1 (One) : open.

9 (Nine) copies of applications in plain papers giving full bio-data including (i) Name in full (in Block letters), (2) Father's name (3) Date of birth, (4) (a) Parmanent address, (b) present address, (5) Present Occupation if any, (6) Present salary drawn if any and the salary expected. (7) Detailed academic career from Matriculation upwards showing Division/Class, agreegate percentage of marks, School/College/University from which appeared (Attested copies of Mark sheets, Certificates should be enclosed), (8) Details of Appointment held with designation, Duration, nature of works and name of employers, (9) Research Contributions with copies of reprints or research experiences supported by documentary evidence. (10) Name and address of Two referees not related to the candidate together with an application fee of Rs 5/- (Rupees five) only by crossed Indian Postal Order drawn in favour of the Registrar, Dibrugarh University should reach the undersigned on or before **31st August, 1988.**

The number of this advertisement and name of the post applied for must be referred to in the application. Persons already in employment should apply from the present employer.

All reprints of the research papers published must be attached. Applications not is conformity with the above requirements will not be entertained.

Candidates will be required to appear at an interview if and when called for, but no T.A will be admissible for this purpose.

Dr. D.H. Goswami
REGISTRAR

SCHOOL OF PLANNING AND ARCHITECTURE

(Deemed to be a University)

4, Block-B, Indraprastha Estate,
New Delhi-110 002

Applications are invited from Indian Nationals for the post of

Registrar

in the School of Planning and Architecture, New Delhi.

Pay-Scale : Rs. 3000-100-3500-125-5000. (Likely to be revised)

Age limit : Below 50 years as on 13.9.1988. Relaxable for displaced persons, SC, ST Ex-servicemen/Commissioned Officers including ECOs/SSCOs/meritorious Sportsmen/Sports Women and residents of Assam. Age is also relaxable for employees of the Government/Semi-Government Undertaking/Autonomous Body and for those having exceptional qualifications and experience.

Qualifications

Essential : (i) At least a Second Class Bachelor's Degree or equivalent qualification in Engineering/Architecture/Technology of a recognised University/Institution

Or

At least a Second Class Bachelor's Degree in Arts/Commerce/Science and a Master's Degree or equivalent Post-Graduate qualification of a recognised University/Institution.

(ii) Ten Years' experience in an executive position in administration and financial affairs and control in recognised institution/organisation.

Desirable : Familiarity with admissions, examinations, Committees, Council meetings, Sensitiveness and constructive approach to the problems of students, personnel and faculty and capacity to develop corporate life.

Qualifications for the above post are relaxable at School's discretion.

Service Conditions & Benefits : The post carries benefits of General Provident Fund-cum-Gratuity-cum-Pension and Central Government Health Scheme Services on appointment. The period of probation is one year. Allowances are as admissible to comparable posts in the Government of India.

Procedure for applying : Application on prescribed form accompanied by attested copies of certificates and testimonials and crossed Indian Postal Order of Rs. 5/- (non-refundable) as the application fee (SC/ST candidates are exempted from the payment of the fee) in favour of School of Planning and Architecture, New Delhi payable at New Delhi Post Office should reach the Registrar of the School by **12th September, 1988.** Request for form must be accompanied by self-addressed unstamped 25 cm. x 12 cm. envelope. Applicants who are in the employment of Government/Semi-Government Undertaking/Autonomous Body must send their application through proper channel.

Candidates who had applied for the post of Registrar in response to the earlier advertisement in the newspapers on 17th February, 1988 need not apply again on the prescribed Application Form. However, they may send their willingness for consideration of their candidature against the advertisement by intimating the Registrar of the School by sending a letter on plain paper in this regard.

Candidates from outside Delhi called for interview will be paid IInd Class Railway fare for both the journeys (within India).

SHASTRI INDO-CANADIAN INSTITUTE

Development of Canadian Studies in India

FELLOWSHIPS FOR INDIAN SCHOLARS IN HUMANITIES AND SOCIAL SCIENCES

FOR THE ACADEMIC YEAR 1989-90

CATEGORIES OF FELLOWSHIPS

FACULTY ENRICHMENT
FACULTY RESEARCH
GRADUATE STUDENT (DOCTORAL RESEARCH)

ELIGIBILITY
FACULTY ENRICHMENT

1. The applicant should be a permanent member of the academic staff of a recognized institution of higher education in India.

2. He/she should provide evidence of interest or involvement in Canadian Studies. This may be demonstrated by courses already given, research undertaken, extra-mural activities or other significant experience such as study tour to Canada, or active membership in the Indian Association for Canadian Studies.

FACULTY RESEARCH

1. The applicant should hold permanent faculty position in an Indian academic degree granting institution; or should be scholars at research and policy planning institutes which undertake significant work on Canada or the Canada-India bilateral relationships.

2. Should hold either a doctorate or equivalent postgraduate qualification.

3. Should be in a position to share their research experience on their Canadian related topic with other scholars prior to publication.

GRADUATE STUDENT (DOCTORAL RESEARCH)

This program is for postgraduate students who have completed their course work and are now doing research for their dissertation.

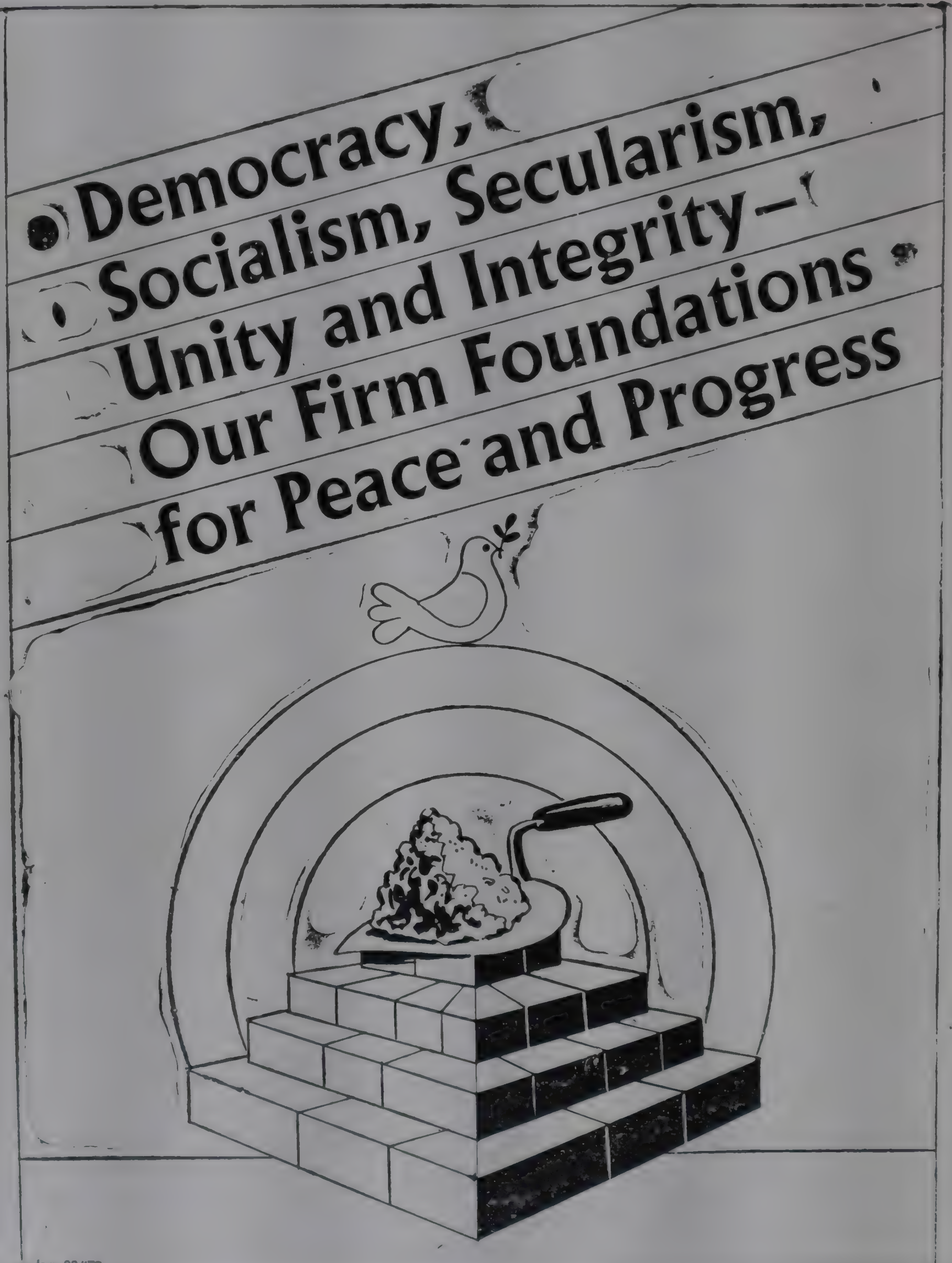
The subject of dissertation must be related to Canada.

LAST DATE FOR RECEIPT OF COMPLETED APPLICATIONS IS NOVEMBER 15, 1988

PLEASE WRITE FOR FURTHER DETAILS AND APPLICATION FORM BY SENDING SELF ADDRESSED Re. 1/- STAMPED ENVELOPE (5" x 10") TO :

THE RESIDENT DIRECTOR
SHASTRI INDO-CANADIAN INSTITUTE
92, GOLF LINKS, NEW DELHI-110003

UNIVERSITY NEWS, MONDAY, AUGUST 15, 1988 Regd. No. R.N. 7180/63 Delhi Postal Regd. D(C) 1086


Democracy,
Socialism, Secularism,
Unity and Integrity–
Our Firm Foundations
for Peace and Progress
davp 88/179

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University News

MONDAY, AUGUST 22, 1988 **Rs. 1.50**

8th

Dr. V. Natarajan, Director (Research), AIU, speaking at the fourth seminar on Implementation & Monitoring of National Education Policy organised recently by AIU at the Madurai Kamaraj University. Seated on his left are Dr. S. Krishnaswamy, VC, Madurai Kamaraj University, Prof. S.V. Chittibabu, Former VC, Annamalai University and President, AIU and Dr. A. Gnanam, VC, University of Madras

CLASSIFIED ADVERTISEMENTS

HIMACHAL PRADESH KRISHI VISHVAVIDYALAYA

'RECRUITMENT BRANCH'
PALAMPUR-176 062 (HP)

Advt. No. 4/88

Applications are invited for the following posts on the prescribed form obtainable from the office of the Registrar personally or by making written request accompanied by self-addressed envelope of 23 × 10 cms. bearing stamp of Rs. 6 00. The detailed instructions regarding qualifications and other conditions will be supplied alongwith the application form. The cost of application form for posts from Sr. No. 1 to 9 is Rs. 10/- (Rs. 5/- for SC/ST candidates subject to production of proof therefor) and that for posts at Sr. No. 10 & 11 is Rs. 5/- (Rs. 2.50 for SC/ST candidates subject to production of proof therefor), which should be sent through IPO(s) payable to Comptroller, HPKVV, Palampur at HPKVV campus PO. The application form duly completed should reach the Registrar, HPKVV, Palampur-176 062 (HP) by **12-9-1983**. Request for supply of application form without requisite fee shall not be entertained.

Candidates applying from abroad may send their applications on plain paper giving full particulars viz; date of birth, examinations passed from High School onwards with division and percentage of marks obtained in various examinations, teaching/research/extension education experience with a list of publications, if any, so as to reach the Registrar, HPKVV, Palampur, by **19-9-1988**.

Posts in the Scale of Rs. 1200-1900 (UGC) :

1. Associate Professor of Home Management-1.
2. Associate Professor of Clothing & Textile-1.

Posts in the Scale of Rs. 700-1600 (UGC)

3. Assistant Scientist of Agrostrology-1.
4. Assistant Scientist of Agricultural Statistics-1.
5. Assistant Extension Specialists (Agronomy)-3
6. Assistant Scientist of Animal Production (Poultry)-1
7. Assistant Professor of Veterinary Medicine-1
8. Assistant Professor of Veterinary Microbiology-1

Post in the Scale of Rs. 940-1850 (State scale)

9. Programmer-1

Post in the Scale of Rs. 700-1200 (State scale)

10. Computer Operator-1

Posts in the Scale of Rs. 510-940 (State scale)

11. Data Entry Operators-2 (1 for SC & 1 for General Cat.).

Applications which are incomplete or are received after due date shall not be entertained.

REGISTRAR

MADURAI KAMARAJ UNIVERSITY

MADURAI-625 021

Notification No. R/28/88.

Dated : 2-8-1988

Applications in Eight Copies on plain paper are invited for the following posts with full particulars in the PRO-FORMA given below and copies of testimonials and such other additional information as the applicants may wish to give.

1. Director, Academic Staff College
2. Director, Institute of Correspondence Course and Continuing Education.

Essential Qualifications

Director (Academic Staff College)

Applicants should possess a Doctorate Degree in Education/Educational Psychology with ten years of UG/PG teaching and research experience in the age group of 45 to 50 (subject to relaxation in the case of deserving candidates).

Director (Institute of Correspondence Course and Continuing Education)

Applicants should possess a Doctorate Degree in any discipline with ten years of UG/PG teaching and research experience with wide knowledge in the administration of non-formal educational institutions.

Scale of Pay : (for the two posts)

Rs. 1500-60-1800-100-2000-125/2-2500 with usual allowances.

(The implementation of the U.G.C. scales of pay is under consideration)

Age limit : 55 years.

1. Name of the applicant.
2. Address (To which communication may be sent.)
3. Age/Date of birth.
4. Community (FC/BC/SC/ST).
5. Present position.
6. Academic Qualifications (with dates on which degrees were taken).
7. Experience
   (a) Teaching : 1. Degree level
   2. P.G. level
   (b) Research (with publications, if any)
   (c) Administration
8. Distinctions/honours
9. Membership of professional, academic or scientific bodies.
10. References (with names & addresses).
11. Testimonials.
12. Any other information.
13. Signature of the Applicant.

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Dr. T. Sivasankaran
REGISTRAR

8th SEP 1988
C. F. T. R. I., MYSOR

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Editor :
SUTINDER SINGH

NEW EDUCATION POLICY

Strategic Initiatives in Higher Education

D.A. Ghanchi*

Higher education holds the key to the destiny of a nation, for it deals with the most sensitive material, viz, knowledge, which is the single, most vital input in the process of development. Through higher education, a community accumulates knowledge from different sources, refines it through a higher process of research and renewal, disseminates it through its formal and nonformal outlet and builds up a durable reservoir of knowledge to sustain itself as a living human society.

Over more than two centuries, India has developed one of the most expansive systems of higher education in the world. Around 170 universities, both statutory and deemed, and 6000 colleges of different faculties dot the country, and provide higher education to about four million students. This huge enterprise has benefited the country in a number of ways, despite its shortcomings. It has produced young men and women who have excelled in their fields of specialization, not only in India but also abroad. Be it the traditional field of public administration or the modern field of business management or the classical branches of physical, natural or mathematical sciences, the products of the Indian higher education system have not lagged behind their counterparts in other parts of the world.

However, there is much to do looking to the scope of and potential for the development of the immense human and material resources of the country on one hand, and the astronomical growth the twin fields of modern science and technology have been registering all over the world on the other. Rightly, therefore, has the New Education Policy (NEP) laid stress on consolidating higher education, correcting the imbalances that have crept into the system, infusing the new spirit of efficiency and excellence in all its departments and introducing innovations in its contents, procedures and approaches. The Programme of Action (POA), as a consequence, has charted a blueprint of a concerted, comprehensive agenda of actions designed to transform the Indian higher education scene into a veritable nursery of leadership in various domains of national life—academics, arts, business, industry, science, technology, politics, social service, and so on.

The POA, by implication, iterates that the system of higher education inherited by the country from the British, and marginally modified since independence as a result of the recommendations by various deliberative bodies, particularly the University Education Commission (1948-49) and the Education Commission (1964-66), needs to undergo major changes conceptually, philosophically, pedagogically and managerially to realize the spirit of the NEP.

This indeed, is a stupendous task because of four main reasons. First, the sheer size of the system is frightening. It involves a

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**Pro-Vice-Chancellor, North Gujarat University, Patan.*

tremendous amount of investment, be it of resources, funds, materials, personnel time, energy and even patience and perseverance even if a small change is to be carried out.

Secondly, the problems generated by the size are further compounded by a bewildering diversity in the system which not unoften assumes features of chaos ! Take, for example, the plethora of statutes, ordinances, regulations and rules governing the functioning of universities, their authorities, departments, affiliated colleges and recognised institutions.

Diversities of courses, examination systems, conditions of service for various categories of employees, work load of teachers and hundreds of other things pertaining to the admission of students, instruction, grant-in-aid by the governments, assistance by agencies like the UGC, role of the private management bodies, etc. are too numerous and complicated and too confusing not to overpower any meticulous planner or administrator engaged in running the apparatus.

Thirdly, paucity of funds, coupled with multiplicity of demands for needs ranging from bare survival of institutions, many of which have mushroomed to satisfy nonacademic considerations, to quality-oriented developmental programmes and projects seriously handicaps any sincere, well-planned endeavour to bring about a substantial change in the system and its working.

Fourthly, there are numerous human factors that are culture-specific in Indian context. For various reasons we tend to prefer the status quo however unpleasant or inconvenient it be. We tend to avoid taking risks lest it should upset the established practices. And even though we have adopted the mode of western democracy based on the principles of equality, freedom, and justice, we tend to extol the virtues of conformity, feudalistic subservience and hierarchical hegemony. This is why many a time we lack the necessary political will, intellectual honesty and moral courage to dissent, to innovate, or to implement a decision. This is why we often falter and deviate from the desirable path. It seems we shall need more time and a stronger character in order that our private morality may match with our public professions and performance in respect of all walks of life, particularly education.

NEP Initiatives

The country, however, cannot afford to wait and postpone the inevitable actions to initiate changes in higher education. Fortunately, certain initiatives have been taken to set the tone. The most notable are as follows.

(*i*) *The Indira Gandhi National Open University*

This initiative promises to make a significant breakthrough in our perceptions of higher education, its philosophy, structure, curriculum, strategies of instruction and evaluation, and methods of management. The experiment is in its infancy, and we shall need patience, sympathy and understanding to watch its performance in the years to come.

(*ii*) *National and State Councils of higher education*

This is an initiative in the area of the structure of the system of higher education, performance evaluation and management. The concept will bring about a fundamental change in the conventional notions and practices of administrative control, academic supervision and institutional accountability.

(*iii*) *Autonomy for colleges and university departments*

After much hesitation and dithering, it seems, the idea of autonomy, almost in a limited sense, will begin to percolate in the hearts and minds of all concerned with higher education in India. Even in the thick climate of skepticism, given a fair trial, this innovation in educational management holds out a promise for a positive change in other domains, tool.

(*iv*) *Restructuring of courses*

Already initiatives have been taken in the form of centres for curriculum development and institutions for leadership in the field of academic change. A few universities, notably the University of Poona, have undertaken pilot projects to redesign courses of study. This is a significant step to rejuvenate higher education in the country.

(*v*) *Academic Staff College*

Around fifty ASCs have already been established in selected universities, and most of them have begun organising four-week refresher courses for probationary teachers in affiliated colleges. Some have, on their anvils, enrichment courses in different subject areas. Pursued single-mindedly, this initiative will go a long way in implementing redesigned courses in our universities.

These new initiatives taken in the wake of the NEP and the POA, though few, are significant, inasmuch as they are harbingers of consistent, ongoing and gradually expanding strategy of consolidating, renovating and enriching the system of higher education inherited from yester years, and modernising, reinforcing and diversifying it for our future needs.

The initiatives taken so far, however, give an impression of picking and choosing stray elements, developing an impromptu implementation strategy for them, and scatter them far and wide. They do not appear to form the part of a well conceived, coherent and comprehensive mosaic that should fit in an anticipatory design for the next decade or two. Perhaps, these beginnings might have been intended to serve as morale-boosters or climate-builders that might generate a psycho-emotional ethos in the field of higher education, in particular, and in the country as a whole, in general to whet the appetite for change and renewal in higher education. Whatever it be the process of the implementation should be closely watched, continually monitored and rigorously evaluated from various angles in order to follow it up with a better-designed scheme of new initiatives in specific areas.

As stated earlier, the field of higher education in India suffers from a number of inadequacies and shortcomings to which reference has been made in the document of the NEP. Fortunately, we are aware of our weaknesses on one hand, and are cognisant of our limitations and constraints to remedy them on the other. The Governments at the centre and in the states have demonstrated their genuine desire to help improve the state of affairs in the field of education, inclnding higher education, by almost doubling the financial outlay on education in the very first year of the implementation of the POA. This augurs very well for the various plans and schemes for the development of education, particulary higher education, whose case for a higher allocation of funds is likely to get a less responsive hearing in view of the shrill cries of the much longer starved field of elementary education whose needs are decidedly not less genuine or urgent.

Those in the field of planning for change and development at different levels in higher education should therefore, adopt a holistic approach to the entire enterprise. The plan of initiatives should be spread over atleast a decade, and the programme of action involving the specific initiatives should be broken up into smaller units of time. The whole process must be participatory, suitably involving all concerned with the system at a particular level. The involvement must be genuine and effective, and based on a sense of mutuality and collegiality among all. This exercise will have to be done at the following four levels :

(1) The college/institute level

(2) The university level

(3) The state level involving the state council of higher education, the directorate of education and all other coordinating agencies in the field of higher education in the state

(4) The national level involving the national council of higher education, the UGC and all other agencies working in the field of higher education.

A suitable and effective provision shall have to be made to ensure coordination, intra and inter-communication, monitoring, evaluation and feedback to realize maximum fruition with minimum wastage.

New Initiatives

In order to ensure order, uniformity and coherence, the new initiatives may be grouped in compact areas pertaining to the field of higher education. These areas are as follows :

(1) *The structure of the system of higher education & its sub-systems*

Under this umbrella would be included several agencies, activities and practices that are required to be structured. Various working groups, committees, time-tables, workplans, staff patterns, etc. have set structures. Initiatives affecting structures whether at micro or at macro levels can be thought of. We have mostly left the various structures untouched considering them to be too sacred to change. Why should we not try a structure like a flexible community college model ?

(2) *The curriculum*

The erstwhile academic programme in colleges and universities has hinged on set syllabuses, prescribed textbooks and stereotyped question-papers, and the concept of a global curriculum has been a stranger. Various models of curriculum can form a part of initiatives aimed at curriculum reform. The idea of redesigned courses is an important initiative that can be experimented on step by step, at least in soft Faculties like arts and commerce to begin with. An interdisciplinary curriculum with flexible boundaries of subject areas is also a challenging domain for an initiative.

(3) *The instructional programme*

This is a vast area involving methods, materials, media, evaluative procedures, remedial and compensatory teaching, study habits, learning problems, etc. It is a very fertile field waiting for experimentation, innovation and action research.

(4) *Student personality development*

Students as clients, beneficiaries and participants in the enterprise of learning have a variety of growth needs, problems of adjustment and goals of development, individually and collectively. Activities and programmes aimed at promoting students' intellectual, scholastic, emotional, social and moral growth, and their maturing into useful citizens can form a part of several initiatives. It is almost an untapped field of meaningful work on the part of teachers, principals, research workers and administrators.

(5) *The Teacher*

The four Rs pertaining to the teacher—Recruitment, Retention, Reward and Renewal—constitute a challenging continuum for purposeful work. The Academic Staff Colleges is a new initiative in its very early stage of implementation. Several initiatives can be designed in the areas of teacher competence, preparation, performance evaluation, professional equipment etc., under various programmes of personnel development in higher education.

(6) *Educational Management*

Initiatives in the fields of planning, financing, administration, organisational climate, private and public models of management, managerial practices, role of the government and politics and strategies of management are some of the challenging areas for experimentation and eventual improvement with a view to improving the entire system of higher education. The proposed model of an autonomous college is just one example of what meaningful contribution can be made in this area of thinking and action.

(7) *Societal role in higher education*

What is the role of society in organising the system of higher education ? There are a number of problems and issues in this unexplored area. Relevance of education to societal needs has been focussed in the NEP. This demands investigation and follow-up through pointed initiatives

In this way, hierarchies of initiatives can be evolved for each of the seven areas of higher education, dovetailed into a comprehensive plan of action, and implemented systematically with a view to improving higher education in respective areas. We need a global plan providing for a variegated gamut of initiatives in various areas. The beginning that has been made with a few initiatives may provide us valuable data to help us design a much wider canvas of initiatives. Only if a vertically coordinated plan from the grassroots level of a college or an institute to the national level with the apex body of the National Council of Higher Education is developed in all detail, can we hope to have an all pervasive, participatory programme of improvement in higher education in the country.

Conclusion

Higher education in India as inherited from the British and modified by us since 1947 is not an adequate tool to meet the myriad leadership needs of a resurgent India, a dynamic democracy based on the principles of equality, equity, secularism and socialism and a vibrant economy supported by modern science and technology. Higher education will have to be attuned to the needs of the India of tomorrow, the India of the world of the fast track of the twenty-first century.

The series of new initiatives that the country will have to undertake to transform the tradition-oriented narrowly-conceived field of higher education into a living nation-building adventure turning out captains of business, industry, arts, literature, culture, science, technology and civic life will have to be designed with sufficient imagination, courage and conviction—the qualities that distinguish a creative path-finder from a conformist pedestrian. □

Autonomous Colleges in Quest of Quality Education

K.K. Bajaj*

Of late, we are getting increasingly conscious of our present and future. This is so perhaps for the reason that our survival is linked to the quality of our education both at the micro and the macro levels. Cultivation of competitive competence is the quintessence of all our educational planning and effort. When we talk about the twenty first century, we in fact think about the unprecedented opportunities in the history of mankind that it is expected to offer to those who would be prepared to grab these. Thus the present challenge lies in preparing ourselves, particularly the youth, for these possibilities of progress. Challenge of the future is indeed a challenge. In the present day context, education is the most important instrument of social change. This is looked upon as a vital input for bringing about social transformation. Education, as such, has to be conceived as people's policy to strengthen our socialistic pattern of society, with a definite quest for quality.

There has always been a near unanimity about the view that the greatest crisis in our national life is the crisis in our education. Late Prime Minister Mrs. Indira Gandhi acknowledged the need to overhaul the system of education way back in January 1973, and our present Prime Minister Mr. Rajiv Gandhi, in his very first broadcast to the nation on 5th January, 1985, gave a call for the New Education Policy. Thereafter the whole spectrum of education was subjected to a national debate; its imbalances and disparities were sought to be ironed out and a definite Plan of Action offered by the Government for implementation. While the New Education Policy highlighted the growing concern over erosion of essential values, it suggested readjustments and experiments in its quest for quality and greater capability in the modern context.

In the present system, the survival of the colleges with the universities alone, has its complexities and dilemmas. Affiliating procedures of the universities help curb establishment and multiplication of spurious and fake institutions coming up in the name of higher education. Besides this, the universities stand established and acknowledged as examining bodies. They also act as unifying agents in administering uniform syllabi, and provide academic leadership. The universities embody collective thinking and innovation in achievement of educational goals through the colleges. However, at times, the universities as apex academic bodies get dominated by the new fangled Deans and administrators and as a result of this the system gets dehumanised and divorced from the requirements of the colleges which have their own ethos and work culture and constraints. There can be no denying the fact that the problems of universities and the colleges are different and require to be solved differently. The flow of information and decisions from the universities to the colleges, at times is slow and inadequate and this hampers the urge of the colleges to improve. It is apparently for these reasons that the revised guidelines on the scheme of autonomous colleges issued by the University Grants Commission, 1986, emphasise the need for autonomy in the following words :

> The affiliating system does not allow the required freedom to the colleges to meet the demands cast upon them. The existence of a large number of affiliated colleges in a university has become a drag on the process of modernisation and improvement of standards. The decision for bringing about innovations can be taken speedily in a smaller body and can also be implemented more effectively if it is acted upon by those who take the decision.

In view of this, the concept of autonomous colleges aims at giving opportunities to the teachers and students to make innovations, utilise their creative talent, improve the standards of teaching, examination and research and quickly respond to social needs. It is a vital step in the restructuring of relations between a college and a university. An autonomous college will take up the responsibility of academic programmes, the content and quality of teaching and for the admission and assessment of students.

Thus we can see that the preamble of the scheme has set up its object very clearly at quality education

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Dean of Colleges-cum-Director, College Development Council, Himachal Pradesh University, Shimla- 171005.

and all its programmes and pursuits would be directed towards this goal alone. While conferring autonomous status on any institution, such criteria as its academic reputation, performance, faculty, library, accommodation, financial and administrative management would be taken into account. The whole mechanism for implementation of autonomy in the college would undergo a series of measures to ensure its smooth functioning and viability. It will be ensured that it is a corporate effort on the part of the teachers, the University, the Government, or the Management, the University Grants Commission and of course the students of the institution concerned. It would only be through this set-up that the element of accountability would also emerge from the experiment.

As a prerequisite towards the implementation of this scheme, the present affiliating procedure has to be discontinued and abandoned and the colleges so identified, have to be allowed to develop and devise academic programmes according to their creative faculties and available resources. In the process, while the universities would continue to offer guidance and cooperation, they would indeed be relieved of the non-academic function of administering the system of affiliated colleges. The universities would then be left to develop higher teaching and research models to enhance the horizons of human comprehension. They would concentrate on quality of higher education at their level alone whereas the autonomous colleges would cater to quality education at grassroot level of higher education and would provide for a more reliable and viable base for entry to the university. The universities would strive to be centres of intellectual leadership, academic excellence and ultimate learning. The colleges would embark upon a more articulate support system in this context. The autonomous colleges may aim at achieving quality education through such independent actions as :

(i) Curriculum reform with students and teachers interacting in the context of the prevailing cultural, social, economic and other problems with a view to evolving tools and strategies more suited to these and within the framework of our common heritage and relevance to community.

(ii) Giving leadership in each subject and making the academic packages more flexible, meaningful and workable.

(iii) By creating interdisciplinary linkages to attempt solutions of the socially relevant problems through integrated approach.

(iv) By promoting local initiative and talent to ensure quality education for socio economic improvement of the area, particularly the rural set-up.

(v) By micro planning in such a way as to involve all the members of the institution to improve the quality of education through a better delivery system.

(vi) By creating area and subject specific pockets of research in such a way as to set up models of excellence and interest for locally keen students.

(vii) To create total awareness in and around the area in this educational initiative and autonomy so as to promote emotional integration and national unity. This would correlate the college to community and its needs.

(viii) By restructuring evaluation strategies in the context of local conditions including local ecology.

(ix) By determining priorities of thrust areas and by proper deployment of funds for the same.

(x) By devising instrumental procedures and by aiming a better communication skills and through better teacher orientation for the same.

(xi) By encouraging interest in co-curricular activities and sports and by generating healthy competition among pupils and by inculcating a sense of pride in our rich cultural heritage.

These are some cf the measures that can go a long way in fulfilling the quest for quality education and making the proposition of autonomous colleges a success.

While the scheme has some of these complimentary points for its success, it has some apprehensions to evoke as well. Let us briefly go into these, so that we could evaluate these also. It has been argued that there is nothing wrong with the present system of affiliating universities. If our system has not yielded the desired results, the fault lies with those who are concerned with it and who have contributed directly or indirectly towards the crisis in education that we are facing today. We have to set our own house in order and partly set ourselves right. For this, lack of political will has usually been given as the one important reason. Through proper motivation and management we could still achieve better results even under the prevailing system. Under the scheme of autonomous colleges, the autonomy works at three levels, i.e., the Governing Body/Management, Academic Council and the Board of Studies. In the context of Governing Body it has been argued that the assortment of people with diverse backgrounds, attitudes and training, would play havoc with the entire system of governing the college. It is suggested that democratic management of educational institutions is not solely the right kind of management and that instead, the management of colleges should be the prerogative of only the mentally alert and dynamic academics. All kinds of political and social leaders cannot be trusted to run these colleges efficiently and objectively. The thrust areas of educational advancement and research, even if identified, by the faculty, would pass their comprehension. In their hands even the concept of capitation fee would get legitimised as there would be no other way to financial autonomy. This would be self-defeating in itself and would make the scheme counter productive and liability prone. The Board of Studies and the Academic Council too would be subservient to such a management and all their actions would be guided and governed by such a management.

But all these arguments notwithstanding, we have a bold framework worthy of our attention and initiative, to experiment for our quest for quality education and local planning. In fact the concept of autonomous colleges is a new landmark in our progressive thinking in educational planning to promote a new independent work culture in our colleges and to free them from their dependence on universities which otherwise should only be the centres of advanced higher learning and academic excellence. After all this academic and functional autonomy is not absolute and for ever, to begin with. The periodical reviews of these colleges and their evaluation with regard to their contribution and performance, viability and control, would alone ensure them to continue with autonomy. Thus, there is clearly the concept of accountability attached to them. And it is expected that the autonomy coupled with accountability will really fulfil the nation's quest for the quality education which autonomous colleges can provide. So the experiment is worth trying in the larger interest of educational growth. □

Sanjay Gandhi Post Graduate Institute of Medical Sciences

Post Box No. 375, Rae Bareli Road, Lucknow 226 001 (U.P.)

ADVERTISEMENT NO. 37/88 **LAST DATE: 15th September 1988**

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EXPERIENCE

Minimum 3 Years experience.

Candidates with special experience in Cardiac monitoring Treadmill test, Heart-Lung-perfusion. Cardiac Cath Lab, EEG, EMG, Cat Scan, Ultrasonography, Dialysis, CSSD, OT procedures, Nuclear Medicine, ICU, Immuno-Histochemistry, Cytology, Hematology, Microbiology, Serology, Tissue Culture, Cytogenetics, HLA Typing, Immunological techniques, Radio-Immuno assay, analytical techniques, animal experiments, physiotherapy, Endoscopy and Clinical Chemistry will be given preference.

Advance increments upto 5 can be given to deserving and experienced candidates on the recommendation of Selection Committee. Allowances as admissible to the employees of U.P. Government will be provided. Relaxation in age as per rules may be considered in otherwise qualified condidates. Candidates belonging to SC/ST and other categories will be given preference as per rules.

Candidates having intermediate qualification with diploma in Medical Laboratory Technology or in Radiography may also be considered in case they possess experience of working in a large Teaching/Research Institute of at least 5 years, if suitable candidates with B.Sc. qualifications are not available.

Typewritten applications should be sent to the undersigned under registered cover with photostat copies of marksheets and certificates in support of qualifications, experience etc., (giving full details of dates and nature of the work done), pay certificate from the present employer.

Persons in employment should send their applications through proper channel The Director reserves the right to reject any or all applications without assigning any reason. Incomplete applications are liable to be rejected.

N.B.

CANDIDATES MUST MENTION ON TOP OF APPLICATIONS THE SL. NO., NAME OF POST AND ADVERTISEMENT NO.

Prof. B.B Sethi
DIRECTOR

Madurai Kamaraj University

MADURAI-625 021

Notification No. R/29/88

Applications in the prescribed form are invited for the following posts in the Department of Management Studies of this University.

1. Professors : 3 (Three)
2. Readers : 2 (Two)
3. Lecturers : 2 (Two)
4. Placement-cum-Programme Officer : 1 (One)

SCALES OF PAY

Professor : Rs. 1500-60-1800-100-2000-125/2-2500
Reader : Rs. 1200-50-1300-60-1900
Lecturer : Rs. 700-40-1100-50-1600
Placement-cum-Programme Officer : Rs. 1200-50-1300-60-1900

(The implementation of the U.G.C. scales of pay is under consideration).

Essential Qualifications required for Posts 1 to 3

1. Educational Background :
   - (a) MBA Degree and Doctorate in Management or in any other discipline.
   - (b) Any Post Graduate degree with Doctorate in Management.
2. Work Experience :
   - (a) PG Teaching experience for atleast 10 years for **Professors.**
   - (b) PG Teaching experience or Executive/Officer level experience for atleast 5 years for **Readers**.
   - (c) Teaching experience preferably at PG level or Executive/Officer level for 2 years.

Desirable Qualifications

(a) Experience in Management Training and/or Management Consultancy.
(b) Involvement in professional organisations and activities.

Essential Qualifications required for Placement-cum-Programme Officer

Candidates with MBA degree should have atleast 8 years of teaching experience/Officer level.

Candidates for all posts should possess 'B' Grade in the 7 point scale, or 55% of marks in their P.G. Degree examinations.

Appointment of persons on deputation will also be considered, if the candidates are found suitable and the employer is agreeable to spare the services.

The prescribed form of application and full details regarding essential general and special qualifications and experience required can be got from the undersigned on requisition accompanied by :

(a) a self-addressed envelope with postage stamps to the value of Rs. 4.00 affixed thereon: and
(b) a State Bank of India challan for Rs. 20/- (Account No. 1 of the Madurai Kamaraj University) or Demand Draft for Rs. 20/- payable at Madurai drawn in favour of the REGISTRAR, MADURAI KAMARAJ UNIVERSITY, MADURAI-625 021.
(c) Money orders and postal orders will not be accepted.

The notification number should be quoted in the requisition i.e. R/29/88.

The last date for receipt of applications is **9.9.1988.** Applications received after the due date will not be considered.

Dr. T. Sivasankaran
REGISTRAR

A NEW OUTLOOK

Delineating technology oriented changes in the future, Dr. S.Z. Qasim, Secretary to the Government of India, Department of Ocean Development, presented a scenario of future India, particularly for the year 2000 A.D. and beyond to show that we will be faced with a new society with new values and concepts depending on the modern marvels of science like computerisation, robotics, etc. This will require new values of life, a new outlook. Dr. Qasim was delivering the Convocation Address at the first Convocation of Bhavnagar University. He called upon the universities "to suitably prepare their students right now through teaching and training in the classes and outside so that they can adjust themselves well to the environment of tomorrow". Excerpts

Convocation

I

Immediately after independence the most important task before the country was its socio-economic development based on modern science and technology. Thanks to the leadership and the vision of Pandit Jawaharlal Nehru, it was soon recognised that the concept of modernity is essential for India for its progress, and a scientific temper was necessary to achieve it. The progress of education has been accelerated because of several factors. The demand for more and more education became necessary because of social forces arising from new convictions about science, about nationalism, about economic development and about human dignity. The cumulative effect of these led to an upsurge of public interest and support for the various forms of higher education. Side by side, education also gave the irresistible urge among the younger generation to obtain higher degrees as a means of fulfilment of their dreams to play a meaningful role in the development of the country. This effect was particularly noticed amongst the economically and socially backward classes. All these factors led to a fast expansion of education. Thus the doors of educational institutions were thrown open to all The result has been that we have now in the country third largest scientific and technical manpower, the level of which is comparable with the rich and the developed countries of the world.

II

India is a country of the dimensions of a continent in terms of its size, population, skills, diversity and natural resources. The approaches to development, which may be applicable to smaller countries are of little relevance of India. For an economy of continental dimension, the bulk of the market for its industrial goods has to be found within the country. The increasing number of workers engaged in the industrial and services sectors and their families have to be fed from the food produced within the country. Naturally, therefore, the growth of agricultural output, specially that of foodgrains, has to be increased at a substantially higher rate, close to 5 per cent per annum. Such an increase in agricultural output will create the right type of environment for the rapid expansion of the country. To make it possible, merely a higher rate of capital formation in fixed assets will not be sufficient. What is required is organisational and institutional change, an accelerated change in the technology of agriculture and industry. A change which may provide a quantum jump. We have already prepared a good foundation for taking a big leap forward. Thus, on the agricultural front, there is a buffer stock of 25 million tonnes. The annual production of foodgrains has reached 155 million tonnes and it is going to increase further. In industry, we are now among the first eight countries in the world. Our railway is one of the largest in the world. In shipping, we are the second largest ship owning country in the Indo-Pacific region. Practically, every consumer item is now being produced in the country. This has all been possible because the planners could foresee that without liberalisation of education and an increase in the emphasis on scientific and technical education, the development of the country could not attain the desired pace. However, we have to go much faster to improve the quality of life of our people.

III

In the last five decades before Independence, there was a renaissance in Indian science which produced scientists of the calibre of Sir J.C. Bose, Sir C.V. Raman, S.N. Bose, Srinivasa Ramanujam and several others who contributed very significantly to the growth of Indian science. These pioneers worked in areas of basic science. Their work was essentially educational institutions. At that time, educational institutions provided unique opportunities for accomplishing work of a highly innovative nature at a low cost. This was due to an academic environment in which fewer but bright young persons participated. The situation, however, changed after Independence. It was realised that the progress of the society was not possible without education and more particularly without science and technology. These were, therefore, allowed to develop as a major instrument for bringing about social and economic changes. Then came Dr. Homi Bhabha, Dr. Vikram Sarabhai and others, whose efforts resulted in major development in industrial research, nuclear energy, space research and advanced studies in fundamental areas of science. A large base of science has now been built over the past four decades. The research institutes, national laboratories and the universities have played a great role in providing such a base. But in the future, we have to concentrate on applied and industrial areas of research, so that the scientists and technologists could meet the challenges of modern India. The universities should now give a thrust in this directiion while formulating their curriculum and deciding the method of teachng.

I would also like to indicate that a time has come when the universities should concentrate on the new and emerging areas of science. It is said that if fiftees were the age of atoms, sixties that of electrons, seventies that of biotechnology, eighties and beyond will belong to space technology and ocean sciences. Therefore, the universities should lay proper stress on these subjects and ensure that the technical manpower in sufficient numbers is provided in these specialised areas.

IV

Our achievements in the field of education are indeed impressive. However, there are two disquietening aspects of education, which require immediate attention. Notwithstanding the efforts made by the Government in making massive investment in the spread of education, notwithstanding the directive principles of the State Policy requiring free and compulsory primary education, the fact remains that effective enrolment in the primary sector is only a fraction of what formal figures of enrolment would indicate. The stagnation and drop-out rates are very high at this level. The reason in most of the cases is economic. Furthermore, the quality of education at the primary level leaves much to be desired. Many schools do not even have the blackboards to write on, not to speak of the comforts of public schools like electricity, accommodation and all other accessories. The result is that most children coming from poor and uneducated families are denied the opportunity of vertical mobility in education. A considerable portion of our promising talents do not go up the ladder. It is a tragic situation. We are reminded of the poetic words "Many a flower are born to blush unseen". The university education becomes a part of elitism. The promotion of this elite class in the realm of education has imposed a heavy burden on the education system and what is still worse is that in many cases, it has thrown up an educated class with specialisation in areas, to which they are quite often not mentally suited. My contention is that cutting off a huge chunk of promising telents for reasons purely social and economic, at the primary and secondary levels of education makes available to the university not always the real products of the soil for further education and upbringing. It is high time that we paid due attention to this aspect to en-

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ASSOCIATION OF INDIAN UNIVERSITIES

CORRESPONDENCE COURSE IN EVALUATION METHODOLOGY & EXAMINATIONS

Applications are invited from college/university teachers for admission to Correspondence Courses in Evaluation Methodology and Examinations at Basic Level, Intermediate Level and Advanced Level/Special Professional Course. The duration of each of the three courses is six months. A personal 'Contact Programme' for three days is planned for each of the three courses. Universities/Institutions sponsoring candidates can meet the registration/course fees from out of unassigned grants by UGC.

Request for prospectus and application form accompanied by a crossed Indian Postal Order for Rs. 10/- drawn in favour of the Secretary, Association of Indian Universities and a self addressed stamped envelope (Rs. 2/-) should reach the Director (Research), Association of Indian Universities, AIU House, 16 Kotla Marg, New Delhi 110002. Last date for receipt of applications is **15th September** for non-sponsored and **26th September, 1988** for sponsored candidates.

sure that children coming from poor families particularly the first generation learners, are not denied the opportunity of vertical mobility and of entering the portals of the universities.

V

The application of science has enabled man to harvest the resources available in nature, which have been lying untapped so far so as to improve the living conditions, and eradicate poverty and disease. In short, science and technology has transformed the quality of life that exists today. In the near future with the improvement in robotics, telecommunications, space and ocean technology, life pattern will further be modified. A stage is soon coming when, as Carter Henderson observes "upto 75% of all current factory jobs in industrialised countries could be done by robots before the end of century. The time is not far when there will be robots cleaning the streets, milking the cows and planting the crops". Advanced technology will have an impact on education and educational institutions in future. The changing pattern of life style will lay more and more emphasis on specialisation and skills. What will all these changes mean? The ever increasing scientific growth will pose many problems of employment in the future, which will be difficult to solve by conventional approach. However, the new technologies in ocean science and space and nuclear energy, will be able to absorb more and more educated and trained people in gainful employment Because of the high degree of automation the working hours will be reduced giving opportunity to the people for original thinking and innovative ideas. Today, we do not have enough time to think because of the pressure of work. Time is perhaps today the greatest constraint, much more than the finance. The technology-oriented changes in the future, it is hoped, would give us more time for an in-depth thinking and as D.H. Lawrence observed, "the day dreamers with their innovative ideas will make positive contributions to human development". I have just given you in brief, a scenario of future India, particularly for the year 2000 A.D. and beyond, to show that we have to face a new society with new values and concepts depending on the modern marvels of science like computerisation, robotics etc. This will require new values of life, a new outlook. Therefore, it is the task of the universities to suitably prepare their students right now through teaching and training in the classes and outside so that they can adjust themselves well to the environment of tomorrow.

VI

Gandhiji said; "the aim of the university education should be to turn out true servants of the people, who will live and die for the country". The traditional universities have used education to teach and to carry out research. A time has come when modern universities should see that they also introduce such curricula which give the added emphasis on service to the society. A university should produce a young band of men and women with qualities of leadership and dedication to inspire others and serve the masses. In today's india we hear the cries all around for national integration. For this, an integration of mind and an outlook towards liberalism and tolerance have become very essential. All these qualities have to be ingrained in the students. The universities should therefore, ensure that proper character building and attitude development takes place during the period of studentship. In the university education, there should be due stress on moral, and intellectual values of life. ☐

Frauds in Scientific Research to be Investigated

The Society for Scientific Values has devised a procedure for investigating occasional allegations of fraudulent practices in scientific research in India. The investigations will be conducted confidentially by experts in the concerned field.

The Society will look into allegations relating to papers, reports, books etc., published within the last 10 years by scientists provided (1) the scientist routes the allegations through a member of the Society, (2) the scientist is of the level of a Reader/Senior Scientific Officer or above, (3) the scientist holds a permanent position in his/her organisation, (4) the scientist gives an undertaking to make a public apology to the person against whom he/she has made the allegations, if the allegations are found to be unjustified by the Society. This is intended to discourage spurious allegations as far as possible.

The Society expects that the individual found guilty of fraudulent practices will be punished according to the rules and procedures of the organisation to which he belongs,

The fields of science in which inquiries will be conducted by the Society are Mathematical Sciences, Physics, Chemical Sciences, Engineering & Technology, Earth Sciences, Plant Sciences, Animal Sciences, Medical Sciences, including Anthropology & Psychology, Biochemistry & Biophysics, and Agriculture, Animal Husbandry, Fisheries & Forestry.

Further details can be had from the Secretary, Society for Scientific Values, DST Centre for Visceral Mechanisms, VP Chest Institute, University of Delhi, Delhi-110007.

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
September 26-28, 1988	**International Conference on Welding Technology in Developing Countries**	**To provide an opportunity to scientists and technologists from developing and advanced countries to share their experiences in the area of Welding Technology.**	**University of Roorkee, Roorkee.**	**Prof. P.C. Gupta, Organising Secretary, International Conference on Welding Technology in Developing Countries, Department of Mech. & Ind. Engg., University of Roorkee, Roorkee-247667**
October 27-29, 1988	National Seminar on Statistics in Medicine, Health and Nutrition.	To discuss Data-Base and Analysis in Health and Nutrition—Present and Future.	Department of Statistics, National Institute of Nutrition, Hyderabad.	Dr. K. Visweswara Rao, Organising Secretary, National Seminar on Statistics in Medicine, Health and Nutrition, Department of Statistics, National Institute of Nutrition, Indian Council of Medical Research, Jamia Osmania, Hyderabad-500 007
Oct. 31-Nov. 4 1988	Short Term Course on Remote Sensing and Geo-Data Base with Socio Economic Information	To expose the concept of Data Base Approach towards handling and analysing the Remotely Sensed and Land-based Information.	Centre of Studies in Resources Engineering, IIT, Bombay.	Dr. T.V. Pavate Chief Project Engineer, Training Extension and Project Cell, RSD-VI, CSRE, IIT, Bombay-400076
December 13-17, 1988	**International Seminar on Education and Training in Water Resources in Developing countries.**	**To assess the requirements of manpower, education and training in Water Resources Sector upto the year 2025 in the developing countries.**	**Central Board of Irrigation and Power, New Delhi.**	**Mr. C.V.J. Varma, Organising Secretary, International Seminar on Education and Training, Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi-110021**
Dec. 15-17, 1988	National Conference on Fluid Mechanics and Fluid Power	To provide a forum for exchange of information on topics in fluid mechanics and design, research and development activities in areas like power generation, aerodynamics, fluidics, biomechanics, etc.	Harcourt Butler Technological Institute, Kanpur.	Dr. N.L. Kachhara, Organising Secretary, 16th National Conference on Fluid Mechanics and Fluid Power, Mechanical Engineering Department, Harcourt Butler Technological Institute, Kanpur-208002

AIU Seminar Series

Implementation & Monitoring of National Education Policy

The fourth and the final seminar of the series of National Seminars on 'Implementation and Monitoring of New Education Policy' being organised by the Association of Indian Universities (AIU) was held at Madurai Kamaraj University on July 25-27, 1988.

Dr. S. Krishnaswamy, Vice-Chancellor, Madurai Kamaraj University, while welcoming the gathering observed that the National Policy on Education meant business and was action oriented. He suggested that deliberations in small groups must focus on identifying ways and means of implementing the policy.

Dr. S V. Chittibabu, former Vice-Chancellor, Madurai Kamaraj University, Annamalai University and President of the Association of Indian Universities, inaugurated the Seminar. He suggested the sweet thoughts of the policy be translated into vibrant action. He paid glowing tributes to Association of Indian Universities on its role of catalytic agent in motivating Universities towards action-oriented programmes. He made an appeal to teachers for attitudinal changes and requested them to identify ways and means of rescuing higher education from the clutches of vested interests. He further requested teachers to guard against mutilation of human spirit, manifest in joy of learning, thirst for knowledge, pleasure in creation and sense of self. He suggested that educationists should see to it that the educational institutions are not polluted by non-academic activities. Intellectuals should not become confused personalities with a conflict between tradition and modernity but must form a unified academic community in the interest and cause of education. He advocated interdisciplinary approach to solve educational problems. He was for autonomy for institutions which had programmes for experimentation and innovation. He underlined the need for state councils for higher education which must be given freedom to act. Prof. Chittibabu observed that examination had dominated the academic world for a long time and it was time some effective mode of evaluation was evolved. He made an appeal for value oriented education and observed that educational institutions had become places where erosion of values and cynicism prevailed; they were contaminated and infected by evil forces and had become a breeding place for aggression and indiscipline. He suggested that we get inspiration from our rich ancient heritage to fight against impulses such as disregard for scholarship and desired a nexus to be built between science and spirituality. Teachers need to be animated. He appreciated the efforts initiated by Association of Indian Universities in this direction. Implementation of National Policy on Education was a gigantic task which needed men of dedication and commitment. He advocated positive thinking and 'be on the move' by way of conclusion.

Dr. V. Natarajan, Director (Research), Association of Indian Universities introduced the keynote speakers.

Prof. B.M. Udgaonkar, Senior Professor of Theoretical Physics, Tata Institute of Fundamental Research, Bombay, spoke on 'Autonomous Colleges and Departments'. He said change was inevitable and if we were afraid of change, change would force us away. The purpose of autonomy was excellence. Ultimately, in about 25 years or so, all colleges should become autonomous, he added. Autonomy implied accountability. Standards were determined, according to him, by what was taught and how it was taught followed by learning outcomes. Every college asking for autonomy should have a goal oriented programme and should utilise resources available from other colleges. He worked out a case for emergence of a dedicated academic community.

Dr. A. Gnanam, Vice-Chancellor, University of Madras, spoke on 'Education in Human Values'. He quoted Vivekananda's observation on Education as a 'manmaking mission'. He drew attention to the current chaos in our educational institutions on account of moral degradation and ethical degeneration. He suggested 'human values' be taught as 'hidden curriculum'—all the basic human values to be incorporated in all the subjects taught to students. He made an appeal for value oriented education but advocated moral and ethical education to be given in the form of incidental and informal learning through co-curricular and extra-curricular activities. He underlined the key role to be played by the teachers in this connection.

Dr. Rajammal P. Devadoss, Vice-Chancellor of the Institute of Home Science and Higher Education for Women spoke on 'Evaluation Process and Examination Reforms'. She advocated drastic changes in our examination system. Evaluation, she said, was an integral part of education—to provide feedback to the teacher and the learner. A sound system of evaluation implied a sound system of teaching which, in turn, implied a sound curriculum. She made an appeal for objective based teaching and objective based evaluation.

Dr. S. Krishnaswamy, Vice-Chancellor, Madurai Kamaraj University, shared his views on Accreditation and Evaluation of Institutions. He was not for the affiliating system. He advocated voluntary and self appraisal of institutions. The objective of such an appraisal was to improve the system, and to make it more effective. He said society perceived universities and institutions of higher learning in three ways—as ivory towers, frontier posts and service stations. The universities and institutions of higher learning had not taken any measures to bridge the gap between them. He observed that the accreditation council should be an autonomous registered body consisting of subject specialists and management people with a sense of objectivity and commitment.

Prof. S.K. Agrawala, introduced the new emerging concept—State Council for Higher Education. He identified the major functions of the body as perspective planning, evaluation and monitoring and resource allocation. An implicity function would be to coordinate with the UGC and Inter University Board for the purposes of coordination and maintenance of standards. He emphasised the point that this council should not subordinate itself to the State Government but must function as an independent and advisory body. The council, according to him, should consist mostly of academic elements.

The following recommendations emerged after detailed deliberations.

I. Autonomous Colleges and Departments

1. The universities may set up committees for implementation of the programmes mentioned in NEP/POA at the university level and at the college level.

2. The universities may take a lead in organising seminars, conferences/workshops at the university and college levels to familiarize NEP/POA and to create awareness among the teachers of the Colleges/Universities and the managements. The relevant paragraphs in NEP/POA may be printed in all regional languages in sufficient numbers, All the teachers should be involved in the seminars and not the representatives alone.

3. The UGC may maintain a live and ongoing contact with the states, universities and affiliated colleges on the progress made in the implementations of the programmes from time to time.

4. The UGC may consider granting funds to colleges which have shown outstanding performance for developing infrastructures, improving and restructuring courses and diversifying researches and exploring new areas of specialization, even in case they are not recommended for autonomous status by the universities concerned An interim status between affiliation and autonomy may be accepted for UGC assistance in case where the conferment of autonomy is not agreeable to the particular state or university due to extraneous constraints.

5. The UGC may maintain balanced approach in sanctioning grants to the universities and colleges for implementation of programmes in NEP/POA.

6. The centre, state and universities should collectively take up responsibilities to achieve the set target of 500 autonomous colleges at the end of the 7th Plan period. For 10% colleges in the country to get autonomous status at the end of 7th Plan period, each university in the country should be encouraged to confer autonomous status to atleast 10% of its colleges.

7. Ways and means are to be identified to create conducive political climate in various states to develop positive attitude towards autonomy.

8. All efforts should be made by the UGC and the universities to create suitable academic environment so that teachers in the universities and colleges develop positive attitude towards autonomy.

9. By special financial assistance, deserving colleges should be helped to get permanent affiliation status so that they can aspire for autonomy.

10. Deserving colleges should be motivated to upgrade themselves by restructuring the courses so as to move on to the autonomous status in course of time.

11. The state governments should provide timely and adequate support in terms of finance and other requirements to the colleges and universities in implementing the various programmes of NEP/POA.

12. The UGC should provide sufficient funds and in time to the colleges for implementation of autonomy.

13. All efforts should be made to remove the following misconceptions in the minds of teachers towards autonomy :

(a) the increased quantum of

work load as specified by UGC and the invisible increase in work load due to special functions of autonomy, for example prescription of syllabus, etc.

(b) loss of examination remunerations;

(c) service conditions and security of service will be affected in autonomy;

(d) elitism will be created, and

(e) teachers will be removed from the national mainstream.

14. The UGC, state government and universities should take immediate steps to remove the problems faced by autonomous colleges enumerated in detail by the various colleges in the report of the task force on autonomous colleges and departments published by AIU. Unless immediate steps are taken to rectify these defects, the spirit of the existing autonomous colleges will be lowered which will make the other non-autonomous colleges hesitant to become autonomous.

15. The UGC and state governments may take steps to remove the anomaly of having two governing bodies in a college, one as prescribed by the UGC and another by the state government.

16. All the state governments should be encouraged to amend the University acts so that any university which desires to confer autonomous status on deserving colleges is able to do so without much loss of time.

17 The autonomous colleges may be given the power of changing their internal management structure, etc, e g., Academic Council, Boards of Studies, etc. in course of time within the framework of the state government and the university.

18. The autonomous colleges may be permitted in course of time to formulate a scheme of incentives such as creation of the posts of Professors and Readers.

19. Autonomous colleges should be evaluated periodically by self evaluation, university, state and by the UGC. The self evaluation should also be checked by external agencies.

20. (a) Interaction among the autonomous colleges, bodies at the state level, regional level and national level for exchange of ideas and for healthy representation.

(b) Interaction between autonomous and non-autonomous colleges, exchange of guest lectures and permanent display of the working machanics of autonomous colleges may be set up in autonomous colleges.

21. The alternative methods of replacing the existing system may be initiated with the assistance from the department of management studies/education of the university, Indian Institutes of Managament, Administrative Staff College of India and NIEPA.

22. The programme of autonomous colleges is at present funded by the UGC for a period of five years. The maintenance expenditure should be continued with the UGC assistance for the rest of the period also on permanent basis.

23. The flow of finance from UGC should not be interrupted by official handicaps and should be provided in time. Proper implementation of the procedures by both centre and state governments will create better atmosphere for development of autonomy to a larger extent.

24. The autonomous colleges should bestow special attention in creating social awareness among the students and in making graduates employable in the job market.

25. Autonomous colleges may be encouraged to attain the status of Deemed University in course of time so that they may award their own degrees provided the autonomous colleges have the following inputs :

- —there should be more concentration on faculty improvement,
- —there should be built-in component for research facilities,
- —some distinctive features of its own in the form of course relevance, etc.,
- —adequate infrastucture such as classroom, laboratory, library, physical education, hostel facilities, administration, building and facilities for student services, etc. should be provided,
- —There must be a gestation period of 5 to 10 years in autonomy, and
- —the assessment reports should be uniformly good.

II Education on Human Values

A. The Group classified the human values as follows :

(a) *Personal Values* : 1. Adaptability, 2 Selflessness, 3. Courage, 4. Cheerfulness with optimism, 5. Sense of excellence and Perfection, 6 Emulation of right models, 7. Initiative, 8. Spirit of Adventure, 9. Hard work, 10. Dignity of labour, 11. Love of freedom, 12. Sense of creativity with originality, 13. Contentment with aspiration, 14. Self evaluation, 15. Self control, 16 Self confidence, 17. Sportive spirit, 18. Simplicity and thrift, 19. Righteousness, 20. Scientific tember, 21. Personal cleanliness, 22. Self discipline and Self respect with open mindedness, 23. Respect for parents, teachers and elders, 24. Concern for children.

(b) *Social Values*: 1. Sacrifice 2. Good manners, 3. Sense of humour, 4. Gratitude, 5. Tolerance, 6. Friendship, 7. Magnanimity with hospitality and charity, 8. Nationalist with international understanding, 9. Cooperation, 10. Civic Sense, 11. Secularism, 12. Communal harmony, 13. Empathy, 14. Aspiration for peace, 15. Fraternity, 16. Gender justice, 17. Social Justice.

(c) *Moral Values*: 1. Dedication to work with regularity, punctuality and sincerity, 2. Compassion, 3. Truthfulness, 4. Concern for environment, 5. Integrity, 6. Sense of duty.

(d) *Spiritual Values*: 1. Love, 2. Sense of beauty, 3. Sense of order, 4. Detachment, 5. Faith in God, 6. Forgiveness.

This classification is only for the sake of convenience. The values are not mutually exclusive.

One member strongly felt that 'Faith in God' should not be included in the list of human values or curriculum as it is subjective value based on one's own beliefs and experience.

B. *Readjustment of Curriculum*: Curricula readjustment have to be made but these need not necessarily be in terms of inserting new topics considered suited for the purpose but mostly in terms of reinterpretation of the various units in the syllabi in light of their potentiality for the inculcation of values. In other words, what is required is an effort by the Board of Studies and other bodies responsible for the development of curriculum to explore in depth learning experiences leading to affective changes essentially required for internalisation of values. This role could and should be played by hidden curricula and cocurricular activities should also be considered by the Boards while reinterpreting the curricula. New units can also be added for the purpose of effective education of human values.

Therefore, a curriculum that emerges out of the readjustment should be a document that could serve as a guide for the value oriented teachers.

C. *Value Orientation for Teachers*: For effective education in human values the most important input is a set of teachers who themselves are value oriented. Therefore immediate steps have to be taken to give both pre-service and periodical inservice training to teachers with special reference to value oriented education. Also at the time of selection of teachers due importance must be given to teachers who are value oriented. The programme of academic staff colleges started recently may be strengthened with this end in view. Teaching, research and extension work of a teacher may be given equal weightage at the time of teacher evaluation.

D. *Co-Curricular and Extra-Curricular Activities for Value Orientation*: Co-curricular and extra-curricular activities like NCC and NSS as well as sports and games and cultural programmes be encouraged.

The existing activities in educational institutions need to be improved with value orientation. The NCC inculcates the sense of discipline, time-consciousness, self-respect, obedience and sense of order. Similarly, the NSS inculcates the sense of team work, cooperation, service, dignity of labour, etc. These programmes may be further expanded to cover larger number of students and may be made more effective. Credit system may be introduced for participating in these activities, as was done during the initial period of NCC.

Similarly, sports and games inculcate the values of team spirit, cooperation, sense of participation and sportsmanship, and contentment with aspiration. However, the existing facilities are inadequate and in the existing curriculum structure the students are made more examination oriented and therefore they are not able to have any value oriented approaches through sports and games.

III. Evaluation Process and Examination Reforms

1. Implementation of 100% continuous internal evaluation at P.G. Level in unitary and deemed universities as well as autonomous colleges from the year 1990-91, which should be extended to the UG level too in a phased manner at least by 1993-94.

2. Indication of students' performance in terms of letter grades and overall performance on the basis of cumulative grade point average.

3. Provision for improvement of performance to be made for obtaining the degree.

4. Decentralisation of the examination process in the case of non-autonomous colleges affiliated to the Universities.

5. Admissions may be made on the basis of performance in entrance tests, wherever necessary.

Conduct of Examinations

6. Legislation at Centre as well as in the States to make malprac-

tices connected with examinations as cognizable and unbailable offences and fix the type and nature of punishments for various offences.

7. Innovative examination processes like arrangement of questions in different orders may be evolved.

Integrating Evaluation with Teaching and Learning

8. The affiliating universities should constitute committees consisting of representatives from affiliated colleges for evolving alternate systems for the conduct of examinations in non-autonomous colleges.

9 No university should be permitted to act only as an examining body.

10. The affiliating universities should come forward to decentralise the processes of course designing viz, combination of courses, accumulation of credits in the form of awarding autonomy to as many colleges as possible at the earliest in order to make the evaluation processes meaningful.

11. Cells for continuous research and development in evaluation procedures may be established both at AIU and independently at institutional levels since evaluation will be at different levels.

General

12. The provision for scrutiny of answer scripts by students should be made for ensuring credibility.

13. There should be provision for clearing examinations in parts in accordance with the patterns of the courses.

14. Gradation should be done on the basis of the scaling techniques.

15. Establishment of Question Banks for UG courses only.

16. Conduct of open book examinations needs to be introduced in specialised subjects areas like engineering design, law.

17. Separate certificates showing the results of institutional and external evaluations need not be issued since the grade sheets contain both internal and external grades.

18. Institutional evaluation should be comprehensive one, including non-scholastic aspects also.

19. The course teachers alone should evaluate their students.

20. The integration of evaluation with the process of teaching-learning could be achieved only through institutional evaluation on the basis of which diagnosis could be made and remedial work done.

National Testing Service

21. National Testing Service should be established to evolve norms and for quality control.

M. Phil and Ph D Programmes

22. In view of large differences in the monitoring and evaluation of M.Phil & Ph. D. programmes among Universities, from the choice of the research problem to the declaration of results it was suggested that AIU should take up the issue to analyse the systems prevailing and evolve a suitable system which will help maintain uniformity and quality of research, and early declaration of results.

Implementation of Recommendations

The following measures were suggested to ensure meaningful and effective implementation of the recommendations.

1. The Teacher-Student Ratio should normally be 1 : 20 and 1 :10 for UG and PG courses respectively.

2. Comprehensive orientation and refresher trainings on aspects like lesson planning, paper setting, scaling based grading, computerised evaluation should be organised at periodic intervals for the benefit of teachers.

3. Provision of adequate curricular-instructional materials like audio-visual aids, well equipped laboratory, computer facilities and library.

4. Establishment of Academic Review and Appeals Committees.

IV. Evaluation and Accreditation

The Group was of an unanimous opinion that Evaluation and accreditation were essential for the betterment of academic institution. However, it was felt that the CONCEPT PAPER prepared by UGC on the subject needed to be modified to suit Indian environment, and the scheme should be mandatory and not voluntary.

Why Accredit

1. The objective of accreditation is to evaluate performance, to recognise that certain minimal standards are met by the educational institutions, to monitor the implementation of programmes, and to ensure that the standards are maintained.

2. Accreditation should be a compulsory follow up to the evaluation system.

3. Accreditation must be taken up for all Higher Educational Institutions though Open Universities and Correspondence Institutes required different guidelines for the same.

4. Accreditation, should have

built-in benefits to the accredited institutions in terms of funds, priority clearance of projects, etc.

Who should do it

1. This task should be performed by a three tier structure comprising:

(a) Self Evaluation (by the institutions itself),
(b) Outside evaluation (by expert panels),
(c) Coordination of expert panel reports (by State level Assessment Council).

2. The national level apex body should issue guidelines for evaluation and seek the assistance of state level bodies for monitoring, evaluating and accrediting procedures.

3. The evaluation body should consist of experts :

(i) Within the educational system (academics and academic administrators)
(ii) outside the system (community opinion leaders) and user agencies (employers).

4. The linkages between organisations such as UGC, AIU, State Councils for Higher Education, Accrediting Assessing Bodies and Universities need to be clarified. Whereas the State Councils for Higher Education could be in overall charge of planning and development, evaluation should be exclusive responsibility of the accredition body.

5. Autonomy and accreditation should be delinked for the purpose of evaluation.

How it will be done

The implementational aspects of the scheme are as follows :

1. Steps :

(a) Establish criteria for evaluation and accreditation
(b) Revaluate periodically to ensure maintenance of standards through annual self-evaluation records and year reviews.

2. Funds :

(a) The Centre should provide the funds for this purpose in the first instance.
(b) Thereafter the accrediting agencies should be self supporting through evaluation fees, etc.

3. Items for evaluation :

The eight items of evaluation as identified are given below :

1. Operations of Institution
(a) days/hours of instruction
(b) days of closure
(c) regularity (of exams, results
(d) academic session
(e) teacher/non-teacher absences
(f) hosting of sport/cultural/academic meets.

2. Administrative climate
(a) democratic
(b) participatory
(c) reform efforts
(d) accessibility and utilisation (funds, facilities)
(e) community support

3. Facilities
(a) hostels
(b) library
(c) laboratory
(d) furniture
(e) classroom
(f) recreation
(g) extra-curriculars

4. Students
(a) response in all India exams
(b) admission requirements%
(c) dropout absenteecism % of pass
(d) extracurricular involvement
(e) student satisfaction
(f) job absorption

5. Teachers
(a) qualifications
(b) publication
(c) presentation
(d) teaching material
(e) student-rating
(f) load (teaching, administrative)
(g) projects
(h) guidance (extra curriculars, projects, tours, counselling)
(i) membership (of associations, special bodies of UGC/Govt.)

6. Extension activities
(a) extension services
(b) community involvement.

7. Publication by the institutions
(a) journals, books, etc.

8. Specical features
(a) workshops
(b) campus production
(c) unique programmes
(d) locational, other handicaps

Prerequisites for Implementation

1. A manual for operating the scheme and for designing and measuring the criteria

2. Appropriate records to be maintained to facilitate the process (such as faculty/other staff work records).

3. Professional orientation of teachers towards the scheme and its benefits.

4. Community involvement.

5. Follow up action for evaluated institutions.

(a) Academic Staff Colleges
(b) Reputation Building
(c) Social and extension services.

V. State Council of Higher Education

1. The group supported the proposal to set up a State Council of Higher Education in each State with a view to improving academic standards, efficient functioning of the university system, further development of universities and coordination of standards in teaching, research, examinations, administration and extension services.

2. The jurisdiction of the Council shall be limited to graduate and postgraduate education in Arts, Science, Commerce, Education, Law, Engineering and Technology, Medicine, Agriculture and so on.

3. (a) The State Council for Higher Education shall be a statutory body created through an act of the State Legislature.

(b) The Government of India may circulate 'a model bill on State Council of Higher Education' to all State Governments indicating the composition, functions, powers and other issues connected with the State Council, in the interest of uniformity.

4. In each major State, the Council shall consist of :

(a) a ful-time Chairman selected from amongst the serving or retired Vice Chancellors;
(b) Not more than 6 Vice-Chancellors, three from the general universities and three from professional universities like Agriculture, Engineering, Medicine, etc ;
(c) Two teachers from among Deans/Professors/and two Principals from the universities and colleges;
(d) Two persons from among the distinguished educationists/industrialists, on all India basis. The Education Secretary and Finance Secretary of the State Government shall be ex-officio members of the Council.

5. The Chairman and members of the Council shall be appointed by the State Government in consultation with the UGC.

6. The term of the office of the Chairman and the members of the Council shall be limited to one term of 3 years.

7. The Secretariat of the State Council shall consist of the Secretary and the supporting staff.

8. The group supports, in general, the division of functions into four categories :

(a) Planning and Coordination
(b) Academic
(c) Advisory, and
(d) Administrative

as recommended by the guidelines of the UGC.

9. The Council should function as the main coordinating body in the field of higher education. Its function shall also be the preparation of a consolidated plan of development of various sectors of higher education in the state, and monitoring the progress of implementation of such development programmes.

10. (a) The allocation of funds as block maintenance grants for higher education in the State should be worked out by the State Council for Higher Education on the basis of some well-recognised norms, such as unit cost of education for each course of study, related to the stage of development of the university or college concerned. The basis and criteria of such determination should be clearly specified.

The grants as finally determined by the State Government in consultation with the State Council for Higher Education should be released in four quarterly instalments, to the universities/colleges, at the beginning of each quarter.

(b) (i) The State Council for Higher Education shall prepare a comprehensive perspective plan for the development of higher education in the State.

(ii) The State Council for Higher Education shall receive, scrutinize and process the development plans of universities/colleges in the context of the perspective plan, and prepare the five year development plan of the State regarding higher education.

(c) The development plan so prepared by State Council for Higher Education shall be finalized in consultation with the UGC, the State Government and other funding agencies.

11. Relationship of the Council with other funding agencies :

(a) In the case of UGC, ICAR, AICTE and similar other funding agencies the Council shall recommend the development plan for the disciplines concerned and shall follow their guidelines issued from time to time.
(b) In the case of Bar Council of India, Medical Council of India and Dental Coucil of India and similar other professional bodies, the Council shall follow their guidelines and directions issued by them from time to time.
(c) Besides, the Council should

have power to make its own recommendations to the above bodies.

12. For purposes of coordination and ensuring achievement of goals and targets the Council may obtain :

(a) periodic reports, and (b) appoint inspection / review committees from time to time.

13. For performing academic functions, as envisaged in the guidelines, the Council shall establish Standing Committee/task forces/cell/working groups, in general functional areas as identified in the guidelines of the UGC.

14. The group supported the setting up of a State Research and Development Board under the auspices of the Council. The Board shall advise the Council with respect to :

(a) the establishment of linkages and coordination between the research in the educational institutions and research agencies (Central and State), in the State; and

(b) to identify the areas and priorities of research in the context of research and development needs of the State, so as to avoid duplication.

15. The Council should have the function of accreditation of institutions through an accreditation board at the state level in cooperation with the national accreditation council.

16. The Coucil shall prepare an Annual Report giving an account of its activities during the previous year and copies thereof shall be forwarded to the State Government and the Government shall cause the same to be laid before the Legislative Assembly. A copy of the Annual Report should be sent to University Grants Commission.

17. The Council shall prepare, in such form and at such time each year as may be prescribed, a budget in respect of the ensuing financial year showing the estimated receipts and expenditure and copies thereof shall be forwarded to the State Government.

18. *Status* : State Council for Higher Education has been set up in Andhra Pradesh through enactment, in April 1988. In Tamilnadu, the bill has been prepared and is pending to be introduced before the legislature. In Karnataka and Kerala, there is an Inter-University Board to coordinate the activities of the universities, with Education Minister as Chairman and all Vice-Chancellors as its members. □

Attention Scientists and Technologists

Indian Expertise in Science and Technology

The Research Cell in Economics of Education of the Association of Indian Universities is conducting a survey of Indian expertise in science and technology in the University sector. It is proposed to prepare a comprehensive database of the skills, knowledge and facilities of the university level institutions as well as a directory of experts in various disciplines of science and technology. The survey is also intended to catalogue the expertise and current research work of Indian scientists and technologists in various fields of science and technology, and will be used as an input for the compilation of a comprehensive database on the scientific and technical manpower in the country. The database will provide a ready reference to the industry, commerce and allied sectors of Indian economy for identifying experts in the relevant fields.

The scientists and technologists engaged in teaching and research in the universities and university level research institutions in India **at the lecturer or equivalent and above levels only** are requested to fill-up the prescribed form, which can be had from the undersigned. The completed form should be returned latest by **September 30, 1988.**

The responses from the academic and research staff are solicited, and their cooperation would be highly appreciated in our venture to build up a comprehensive database.

For the prescribed form, kindly write to :

M M Ansari
Joint Director
Research Cell, Economics of Education
Association of Indian Universities
AIU House, 16 Kotla Marg
NEW DELHI 110 002

British Aid for IGNOU

The British and Indian Governments are reported to have signed an agreement under which a grant of £ 3.356 millions (over Rs. 8 crores) will be provided to the Indira Gandhi National Open University (IGNOU). The grant specifically aims at helping IGNOU meet its current targets under its development programme.

The long-term objectives of the programme are (i) to provide higher education opportunities to large segments of population, particularly those for whom access through the formal system is difficult or impossible; (ii) to meet the growing need for continuing education for people at work, who need to improve their qualifications and experience, but who cannot afford to withdraw from their full-time occupation nor follow courses not directly relevant to their chosen careers ; and (iii) to form a focus for raising the standards of course work produced by the correspondence colleges all over the country and to coordinate the work of the State Open Universities within a national network.

The present agreement provides for help in the form of short-term consultancies, equipment, U.K. and in-country training and short visits to Britain in the following areas : Media services (a multimedia approach to its instructional system is central to IGNOU's method and philosophy of operation); computer facilities (to handle student registration and administration part of the course assessment, project control and management information); packaging and printing facilities (advice on the establishment of the IGNOU printing press facility, the streamlining of the existing infrastructure for the publication of material, and the printing, packaging and distribution of study material); academic and applied course development and regional and study centre services (including library support).

Diplomas Recognised

On the recommendations of the Board for Educational Qualifications, the Union Government is reported to have recognised the following diploma courses or examinations for the purpose of employment under the Central Government :

(I) Three-year diploma course in knitting technology conducted by the Silk and Art Silk Mills Research Association, Sasmira, Worli, Bombay, of which the diploma is awarded by the Board of Technical Examinations, Maharashtra, for subordinate posts.

(II) Part I or Part II echnician engineers examinations (T) conducted by the Institution of Mechanical Engineers (India) at par with diploma in mechanical engineering from State polytechnic for subordinate posts.

(III) Pass in the final or direct final examination of the Institution of Surveyors for two separate courses in building and quantity surveying and valuation surveying for superior posts.

(IV) Postgraduate diploma in personnel management and industrial relations. The Government has also approved the change in the nomenclature of the present postgraduate diploma in industrial relations and welfare awarded by the Xavier Labour Relations Institute, Jamshedpur, to postgraduate diploma in personnel management and industrial relations for superior posts.

VC Takes IGNOU Exam

The Vice-Chancellor of the Gujarat Vidyapith, Prof. Ramlal Parikh, at the age of 62, appeared in the recent nation-wide term-end examination for one-year Diploma in Managemeet conducted by the Indira Gandhi National Open University (IGNOU). He sat for three hours along with other students writing answers of the question paper of this correspondence course at the Study Centre in the Gujarat University.

Last year Prof Parikh had sat for two days with Secondary and Higher Secondary students and qualified the Hindi Vinit Examination.

A noted educationist, Prof. Parikh has been managing the Gujarat Vidyapith and many other educational institutions since for over 36 years now. Prof. Parikh said that he was studying the National Open University course to reinforce the Gandhian view of education as a life long process and to support open-learning systems for extending education of the highest order being made available at the door steps of our masses. He is perhaps the first Vice-Chancellor to voluntarily appear in the IGNOU examination. The Gujarat Vidyapith is cooperating with IGNOU in preparing a foundation course for Gujarati language and Gujarati version of Food & Nutrition Course of IGNOU.

Modernising TIET Labs

The Ministry of Human Resource Development (Department of Education), Government of India, has sanctioned a sum of Rs. 20 lacs to the Thapar Institute of Engineering and Technology (TIET), Patiala for the modernisation of the High Voltage Laboratory during the current year.

The high voltage test equipment and instruments would strengthen the teaching and research activities of the Department. They are single stage 140 KV impulse voltage test set-up, portable capacitance tan-delta bridge with a 10 KV power supply, test cell for liquid insulants to measure tan-delta and resistivity at elevated temperatures and a combined impulse/ac voltage divider with high accuracy (± 1%) with impulse and a.c. peak voltmeters. In addition, a high vacuum system has been added to undertake vacuum breakdown studies. The design and fabrication of a vacuum chamber is in progress.

The laboratory is already equipped with some major instruments. Chiefly amongst them are the 500 KV, 12.5 KJ impulse voltage test system, 150 KV power frequency test set-up and partial discharge detector.

The Institute has also received Rs. 15 lacs for upgradation of Microwave Laboratory in the year 1988-89 in the Department of Electrical and Electronics Engineering. With this grant the Department would procure the following items : (1) Network Analyser with x-band sweep oscillator; (2) Printed circuit facilities for MIC works; (3) Antenna facility, microwave test bench, high power microwave components; and (4) Anechoic chamber for antenna measurements.

The Jayenu Bookshop

The library at the Jawaharlal Nehru University has been able to save more than Rs, 2 lakhs in 1987-88 through a new venture. In view of the prohibitory trade practices by the book trade, the JNU library has experimented with the setting up of a bookshop to make all the purchases of books from the publishers, wholesellers, and distributors. The books, thus, purchased were supplied to the University library thereby getting favourable rates of discount from them ranging from 15% to 25% or in certain cases even more. The Jayenu Bookshop was set up in September, 1986 as a retail sale outlet. During the year 1987-88, books worth about Rs. 20 lacs were purchased by the Jayenu Bookshop and, thus, an amount of about Rs 2.01 lacs was saved in the form of higher discount which is normally not availalbe to the libraries but is available only to booksellers.

The amount, thus, saved has been recycled in the purchase of more books in the library. The bookshop has, thus, been helping the library in judicious, speedier and needbased acquisition of new books.

Orientation Course for Teachers

Speaking at the valedictory function of the 3rd Orientation Course of the Academic Staff College organised by the Dr. Harisingh Gour Vishwavidyalaya, Prof K.K. Tiwari, Vice-Chancellor, Jiwaji University, said that teachers should act as change-agents and be a role model for the students. He urged the teacher-participants to prepare the students for the competitive world and channelise their energy in creative directions.

Prof. P.D. Hajela, Vice-Chancellor, who presided, pointed out that teachers should combine scientific temper with idealistic outlook. Teaching demands commitment towards students and the desire to learn, he added.

GND Varsity Offers New Courses

Guru Nanak Dev University has started postgraduate diplomas in sugar and printing technology as well as Master's degree in computer application at the university campus from the current academic year. This was announced by the Vice-Chancellor, Mr. G.S. Randhawa, in Amritsar recently. Besides, courses in physical education, health education and sports would be introduced this year, he said.

Mr. Randhawa pointed out that the university was endeavouring to start more job-oriented courses. Courses in life sciences, physics and chemistry were being modified, he added.

Autonomy for 82 Colleges

The University Grants Commission has decided to accord autonomous status to 82 colleges in various states. This was revealed by Mr. L.P. Sahi, Minister fo Education, in Rajya Sabha recently. Of these, 40 were in Tamil Nadu, 21 in Andhra Pradesh, 16 in Madhya Pradesh, four in Rajasthan and one in Gujarat

Degree Course in Printing

Jadavpur University proposes to start a new four-year degree course in printing technology from the next academic session. Initially the intake for the course would be ten

Kurukshetra Varsity Offers New Courses

The Kurukshetra University has introduced a Postgraduate Diploma in Portfolio Management.

The intake of this course for this year is ten. The University also proposes to start M.Sc. in Bio-Physics and Bio-Technology and M.Tech. and M.Sc. courses in Applied Geology. The University has decided to introduce +2 courses through correspondence in its Directorate of Correspondence from the current session.

Scientific Equipment for IIT, Madras

The Humboldt Foundation, Bonn, Federal Republic of Germany, has donated Scientific Equipment worth Rs. 3.00 lakhs to Prof. P.K. Philip, Mechanical Engineering Department, IIT, Madras, who has been their Senior Fellow during 1975-77 and 1986. The donation consists of an HP Vectra Computer (PC/AT) System including several accessories and Philips Digital Storage Oscilloscope with Plotter and Camera. Suitable interface to interlink them are also provided. It will be used for Research in the field of Production Engineering.

News from Agril. Varsities

Women's Role in Agrl. Production

Dr. P.N. Mathur, Assistant Director-General, ICAR, said in Bangalore recently that the Council was launching a new nation-wide project with the objective of helping rural women play a more effective role in agricultural production. According to him, the project aimed to correct the imbalance in the existing situation where while women constituted 50 per cent of the country's population and in some states did 75 to 80 per cent of the work relating to agriculture, the present technologies (like the development of farm implements) seemed to be more geared towards utilisation by men. Likewise, the process of decision-making (in important selection areas like of crops and fertilisers) was, at present, mainly in the hands of men.

Dr. Mathur said that the project aimed to identify the technologies required to help rural women play a more effective role as farmers. There would be a focus on various areas, like formulating training programmes for rural women and developing farm implements more suitable for use by women. However, before new technologies suitable for women were developed, a nationwide study would first be done to determine the role being played by women in agriculture at present and under different farming systems (particularly rice-based farming systems). For this purpose, the agricultural universities (especially those in traditional and non-traditional rice-belts) would be asked to conduct studies.

Rural Varsity for Andhra

A Rural University in Andhra Pradesh is likely to be set up at one of the district headquarters of Srikakulam, Mehboobnagar and Anantapuram. According to Prof. K. Venkata Reddy, Vice-Chancellor of Sri Krishnadevaraya University, a project report in this behalf has been submitted to the government.

The purpose of the Rural University was to educate the rural families on modern farm techniques thus turning them into progressive farmers. Besides this, training in health, hygiene, rural housing, handicrafts and allied professions would also be given to rural people in this University. The unemployed educated youth in rural areas would also be motivated through this university to seek self-employment schemes without depending on government.

Weed Control Project for BAU

The Birsa Agriculture University (BAU), Ranchi is reported to have been selected under the All India coordinated research programme on 'weed control'.

Under a Rs. two crore United States International Development Fund, the Indian Council of Agriculture and Research (ICAR) had launched the project to carry out research for increased production of rice, wheat, pulses, oilseeds and other crops under the climatic conditions of respective zones by containing the growth of weeds.

In this connection an ICAR expert and the programme coordinator for weed control, Dr. V.N. Sarswaqt held detailed discussions with the BAU's Vice-Chancellor, Dr. J.C. Kundra to remove constraints in the way of smooth implementation of research programmes on 'weed control' in the climatic conditions of Chotanagpur and Santal Pargana.

AIU News

XLRI Diploma Equated with MBA

The Association of Indian Universities (AIU) have recognised the Postgraduate Diploma in Business Management of the Xavier Labour Relation Institute (XLRI), Jamshedpur, as equivalent to MBA degree of an Indian University. The Diploma is already accepted by the Board of Assessment for Educational Qualifications, Govt. of India, for purposes of recruitment to superior posts in central services.

The Institute had applied to the AIU for recognition in 1987. The AIU Expert Team visited the XLRI to make an on the spot study. They had a series of meetings with the Faculty, Institute's Committees and students. The Team also examined the infrastructure and campus facilities which include airconditioned open access-library with a collection of around 30,000 books and 450 periodicals subscriptions, computer centre, auditorium and appropriate amenities for sports, recreation and housing for students and faculty. Over the years the XLRI has developed its own culture characterized by informality, flexibility, development of the whole person and service to the country. The Institute also finds a mention in the NEP document as an institution imparting education at the highest level.

The XLRI has also introduced Fellowship Programme comparable to Ph.D. degree. Management Development Programmes are the routine activities throughout the year to meet the demand of Trade and Industry.

News from Abroad

EDSTATS—Software for Educational Statistics

Unesco's Office of Statistics has recently announced the availability of a new self-contained software package—EDSTATS—for the analysis of educational statistics. Developed with financial assistance from the Swedish International Development Authority (SIDA) for IBM PCs (and compatibles) and guaranteed "easy" for persons with no prior expertise in computers, it includes a broad range of analytical tools to facilitate the analysis, diagnosis and assessment of the quantitative development and efficiency of primary and secondary education systems. It is hoped that EDSTATS will encourage Member States to analyse their education systems on a regular basis and induce them to promote and improve the collection of basic education statistics. Of particular value for educational planning, EDSTATS can also be used to reinforce teaching activities. Tested in February 1988 at a training seminar in Ethiopia, it will complement other courses later this year in Botswana and Zambia as part of a Unesco/SIDA programme to upgrade the skills of statisticians (890 persons have attended 28 seminars since the project began in 1983) in 13 English and Portuguese-speaking African countries and in Nicaragua. Further information on EDSTATS can be obtained from the office of Statistics, Unesco, 75700 Paris.

Marine Science Education in 21st Century

Dr. Joseph Baker, Director of the Australian Institute of Marine Science, Dr. Robert Stewart of the Centre for Earth and Ocean Research at the University of Victoria (Canada) and other leading marine scientists from 20 countries met recently at Unesco's Paris Headquarters to anticipate

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We Congratulate...

(1) **Dr. Malwinder Singh Tiwana, Senior Agronomist (Forage) in the Department of Animal Science of the Punjab Agricultural University, who has been appointed a member of the budget and policy committee of the International Herbage Seed Production Research Group (IHSPRG) at Tune (Denmark).**

(2) **Professor S.P. Agarwal, Department of Physics, Awadhesh Pratap Singh University, Rewa, who has been nominated as member on the National Committee for COSPAR (Committee on Space Research).**

(3) **Shri C. Deenadayalu, Deputy Librarian, IIT-Madras, who has been elected as President of the recently formed Indian Technical Library Association (ITLA) in Mysore.**

the needs of "Education and Training in Marine Science for the Year 2000 and Beyond". They mainly explored more appropriate methods like distance and computer-assisted learning and streamlined data exchange to help marine scientists incorporate the huge amount of knowledge on the deep-sea, coastal process, climate-related events, etc., assimilate changing technologies, particularly electronics, remote-sensing and computers, keep abreast of expanding marine resources exploitation and gauge the impact of human activities on the marine environment. Participants insisted, however, that because potential uses of the sea are so diverse and management so much more complex than for the land, the understanding, protection and wise use of the sea and its resources cannot depend on science alone, but requires education at all levels of society. Workshop proceedings and recommendations, notably for inclusion in Unesco's Third Medium-Term Plan (1990-1995). will be published in the series **Unesco Report in Marine Science**. available from the Division of Marine Science, Unesco’ 75700 Paris.

Biotechnology Centre

The University of Queensland, in Brisbane, has established a centre which combines the disciplines of molecular biology and biotechnology. The new centre will enable the university to centralise its equipment, materials, and expertise, boost teaching and research programs and speed up projects with commercial potential.

Established with funding from the university's own resources, mainly from the biological sciences departments, the new high-technology centre would help maintain an important Australian presence in the world explosion of knowledge in molecular biology and biological sciences.

It has cost $1 million to establish and will involve spending of about $370 000 a year to support staff, including 12 new positions at the centre, and $120 000 a year in maintenance.

Maharashtra Association for the Cultivation of Science

LAW COLLEGE ROAD : PUNE-411 004

This Institute proposes to admit a number of students for the following degrees of the University of Poona.

Ph.D. in the following disciplines :

(a) Biometry—2, (b) Botany—1, (c) Chemistry—3,
(d) Genetics—2, (e) Geology—4, (f) Mycology—4,
(g) Microbiology—4.

Candidates must possess a higher second class, preferably first class M.Sc. degree in the respective Subjects. Limited hostel facilities are available for male students.

Blank application forms with prescribed conditions can be had from the Institute, personally or by sending MO for Re. 1/- drawn in favour of the Registrar, M.A.C.S. Pune 4, and a self-addressed envelope (9½ x 4½) bearing stamps worth 75 p.

Last date for receiving completed application forms is 31st August, 1988.

C.S. Nakate
REGISTRAR

SHASTRI INDO-CANADIAN INSTITUTE

92, Golf Links, New Delhi-110003.

SOCIAL SCIENCES & HUMANITIES FELLOWSHIPS FOR THE ACADEMIC YEAR 1989-90

Two annual fellowships have been established for Indian scholars in Social Sciences and Humanities to do research/study at a designated university in Canada for one academic term. The fellowships are to be held from 1 September 1989. The candidate should be a scholar at the middle level of his/her career stream who :

(a) has proven ability for research and teaching :

(b) will concentrate on a specific project of study in Canada from a comparative perspective on Canada-India topics;

(c) has a reasonably clear plan of work during the visit indicating the intention to continue work in the same area on return to India in order to enhance the knowledge of Canada within the Indian academic community; and

(d) is willing to take up the fellowship, if offered, and undertake to leave for Canada by 1 September, 1989.

The Institute will bear the cost of travel of the selected scholar to and from the designated university (shortest economy/excursion return airfare). In addition, the Institute will pay a maintenance allowance of C$ 1,500.00 p.m. for a maximum period of four months and a sum of C$500.00 for purchase of books and personal effects.

FELLOWSHIPS FOR WOMEN IN DEVELOPMENT FOR THE ACADEMIC YEAR 1989-90

Applications are invited from Senior Indian scholars for two fellowships for a lecture and research programme to help develop expertise in the area of Women in Development at selected Canadian universities. These senior visiting fellowships are to be effective from September 1, 1989 for one academic term (13 weeks). The candidates : (1) should be established scholars in India with demonstrated ability for research and lectures on women in development, (2) will be expected to assist individuals or groups in the development of research expertise on women in development in appropriate Canadian universities, (3) should be willing to take up the fellowship, if offered, and undertake to leave for Canada by September 15, 1988.

The Institute will bear the cost of travel (excursion return airfare) of the selected candidates. In addition, the Institute will pay a maintenance allowance of Canadian dollars 2,500 00 per month for a maximum period upto four months, and a sum of Canadian dollars 500.00 for the purchase of books and personal effects.

Applications, which must include a detailed bio-data, research proposal and list of lecture topics (7 copies each), must reach the Shastri Indo-Canadian Institute, 92 Golf Links, New Delhi-110003 not later than November 15, 1988.

Particulars of fellowships with application form can be obtained by sending self addressed Re. 1/- stamped envelope (5" x 10") to :

THE RESIDENT DIRECTOR
Shastri Indo-Canadian Institute
92, Golf Links, New Delhi-110003.

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

ADDITIONS TO AIU LIBRARY

Recent Acquisitions on Sports

Anand, R.L. *Playing field manual.* Patiala, Netaji Subhas National Institute of Sports. 1971. 119p.

Banaras Hindu University, Varanasi. *Games in Indian miniatures.* Varanasi, Author. discontd.

Barrett, Worman. *Great moments in sport.* Bristol, Purnell (c 1982) 115p.

Brancazio, Peter J. *Sport science : Physical laws and optimum performance.* New York, Simon and Schuster (c 1984) 400p.

Chu Donald and others, ed. *Sport and higher education.* Illinois, Human Kinetics (c 1985) xv, 423p.

Clarke, H. Harrison and Clarke, David H. *Application of measurement to physical education.* New Jersey, Prentice-Hall (c 1987) xii, 371p.

Commonwealth and International Conference on Sport, Physical Education, Dance, Recreation and Health, 8th, 1986, Glasgow. *Proceedings.* 7V. London, E. & F. N. Spon (c 1986).

V1. Coach Education.
V2. Dance.
V3. Kinanthropometry III.
V4. Sport and medicine.
V5. Sport, culture, society.
V6. Sports science.
V7. Trends and developments in physical education.

Das, S.N. *Physical education, games and recreation in early India.* Lucknow, Upper India, 1985. xvi, 132p.

Dudley, Ernest. *Run for your life.* London, Columbus Books (c 1985) 180p.

Ezersky, Eugene M. and Theibert, P. Richard. *Facilities in sports and physical education.* Saint Louis, C.V. Mosby Co., 1976. ix, 193p.

General Association of International Sports Federations, 19th Congress, Amsterdam, 1985. *Development of sport : Guidelines.* Amsterdam, Author, 1986. 80p.

Hargreaves, John. *Sport, power and culture : A social and historical analysis of popular sports in Britain.* Cambridge, Polity Press (c 1986) xii, 258p.

Hazeldine, Rex. *Fitness for sport.* Marlborough, Crowood Press (c 1987) 122p.

Horne, John and others, ed. *Sport, leisure and social relations.* London, Routledge & Kegan Paul, 1987. vii, 253p.

Iyengar, B.K.S. *Light on yoga.* London, Unwin (c 1976), 544p.

Jayadeva Yogendra, ed. *Cyclopaedia yoga.* Bombay, Yoga Institute, 1988. 162p.

Jensen, Clayne R. and Hirst Cyntha C. *Measurement in physical education and athletics.* New York, Macmillan (c 1980) x, 300p.

Jones, C.M. *Tennis.* Middlesex, Newnes Books (c 1985) 92p.

Kleindienst, Viola K. and Weston, Arthur. *Recreational sports program : Schools...colleges...communities.* New Jersey, Prentice-Hall (c 1978) xiv, 489p.

Larson, Leonard A. *Foundations of physical activity: Applications as disciplines and professions.* New York, Macmillan (c 1976) ix, 386p.

Lynam, Desmond. *Guide to the Commonwealth games.* London, BBC Publications (c 1986).

Mahajan, S.N. *Science of yoga and consciousness.* Agra, Y.K. Pub. 1987. xi, 212p.

Mathur, L.N. *Dramatic moments in Ranji Trophy.* Udaipur, Author, 1987. 184p.

Morrison, Ian, comp. *Intersport rules and equipment of the game.* London, Pelham Books (c 1987) 160p.

Norback, Craig and Norback, Peter. *New American guide to athletics, sports and recreation.* New York, New American Library (c 1979) xii, 659p.

Sounders, E.D, and White, G.B. *Social investigation in physical education and sport.* London, Lepus (c 1977) 103p.

Sorensen, Jacki and Bruns, Bill. *Aerobic lifestyle book.* New York, Poseidon Press (c 1983) 205p.

Tver, David F. and Hunt, Howard F. *Encyclopedic dictionary of sports medicine.* New York, Chapman and Hall (c 1986) xxi, 232p.

Walliser, Blair. *Competitive fitness.* New York, Simon and Schuster (c 1984) 175p.

THESES OF THE MONTH

A List of Doctoral Theses accepted by Indian Universities.

HUMANITIES

Philosophy

1. Chander Prabha. *Philosophical implications of Krishna legend.* Meerut. Dr. R.N. Sharma, Prof. and Head, Department of Philosophy, Meerut College, Meerut.

2. Chauhan, Dinesh. *Swami Dayanand ka samaj-darshan.* Meerut. Dr. Ved Prakash, Department of Philosophy, Meerut College, Meerut.

3. Dinesh Singh. *Shankar Vedant aur Kashmir Shaiv Darshan mein paramatatva ka tulnatmak adhyayan: Sameekshatmak adhyayan.* BHU. Dr. B.L. Mishra.

4. Dixit, Suresh Pratap Singh. *Madhyamik darshan mein tark ka sthan.* BHU. Dr. B.N. Singh, Reader, Department of Philosophy, Banaras Hindu University, Varanasi.

5. Ghatak, Kanaklata. *Privacy of sensations: Problems of knowledge and ownership.* Burdwan. Prof. Aminul, Haque, Department of Philosophy, University of Burdwan, Burdwan.

6. Kantacara, B.P.K. *Buddhist philosophy in its social and educational relevance in modern Thailand.* BHU. Prof. N.S.S. Raman, Department of Philosophy, Banaras Hindu University, Varanasi.

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Dance

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Sanskrit

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Pali

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9. (a) Details of papers published, if any :
(b) Research Work done/practical training received

Name of firm	Date of joining	Date of leaving	Monthly Honorarium/stipend/ Fellowship or Apprenticeship allowance, if any.	Nature of training

10. (a) Particulars of employment :

Office/Institution where employed	Date of joining	Date of leaving	Post held	Monthly Salary	Nature of duties

(b) Indicate what you have been doing since last examination mentioned in item 8.

(c) Have you any contract obligation with your employers? If so, furnish details.

11. (a) Knowledge of foreign languages, if any (Attach proof if possible)

Skill		Very Good	Good	Fair	Nil
Comprehension	Spoken				
	Written				
Expression	Speaking				
	Writing				

12. (a) Nature of proposed programme of study/research :

(b) Name of the Institution (if known) where admission/training is desired (in order of preference).

(c) Are you willing to accept a place at some other institution if the appropriate scholarship agency recommends it?

(d) Have you already approached any University or University Professor in the country in which you intend to study? If so, give names and results attach copies of replies.

13. Give, separately in extra sheets, brief statement in about 100 words each about: (i) The work engaged in (ii) Nature, programme of study/research desired.

14. Future prospects after studies/research
(a) Plan for the future (b) How are these related to the technical or economic development of the country?

15. (a) Have you applied for any other scholarship in the last two years? If so, state the name(s) of the scholarship(s) and the subject of study/research proposed therein. Are you willing to be considered under any similar scholarship scheme involving study in another country? If so, which?

(b) If you had applied under this scheme previously, please indicate the result.

16. Have you ever been abroad? If so, give the following particulars :

Country visited	Date of visit	Duration of visit	Purpose of visit	Scholarship received, if any

17. Father's name (in full)
(a) Nationality (b) Occupation (c) Address

*18. In case you are married, please state
(a) The name of your Husband with full address
(b) Nationality
(c) Occupation
(*) For married female candidates only.

19. Crossed Postal Order of Rs. 5/- (Rs. 1.25 in case of SC/ST and other backward classes) issued after the date of publication of this advertisement and payable to the Secretary, Ministry of Human Resource Development (Department of Education) New Delhi must be attached with the application form. Kindly give details of Postal Orders attached.

Sr. No.	Postal Order No.	Date of issue of Postal Order	Name of the Post Office issuing the Postal Orders	Value of the Postal Order Rs. · Ps.

20. I hereby declare that the entries in this form and the additional particulars (if any) furnished in reply to th questions above are true to the best of my knowledg and belief.

Place : Date : (Signature of the Candidate)

21. (a) Certified that Shri/Smt./Km......is employed by us/ me and he has been sponsored by us/me for study abroad.

(b) He/She will be relieved by me/us, if selected.

(c) I/We undertake that he/she will be permitted to join his/her department/organisation on return from study abroad. I/We will ensure that his/her terms and conditions of service i.e. salary, seniority, promotion, leave etc. will not be adversely affected on account of his/her absence and further that every thing possible will be done to provide the scholar with work and conditions of service suitable to and commensurate with his/her qualifications/training obtained abroad.

(Signature of Employer/Sponsoring Authority)

Place : Seal of Office

Date :

@ Strike out if not applicable.

davp 88/261

Guru Nanak Dev University

AMRITSAR

ADVERTISEMENT NO. 4/88

CORRIGENDUM

I. Qualifications/experience for the posts of Director, Reader and Lecturer for Academic Staff College may be read as under :

Director : (Sr. No. 5) (Grade Rs. 4500-7500)

Essential : First or high second class Master's degree; 10 years teaching experience in College/University; Experience of conducting workshops/orientation courses.

Desirable : Ph.D. or published research work of high standard.

Reader (Sr. No. 15) **(Grade Rs. 3700-5700)**

Essential : First or high second class Master's degree; 10 years teaching experience in College/University.

Desirable : Experience of conducting workshops, orientation courses/or of working as resource-person for Seminars, Workshops/orientation courses.

Lecturer : (Sr. No. 37) **(Grade Rs. 2200-4000)**

Essential : First or High second class Master's degree.

Note : For all the three posts :
(i) the appointment in the first instance will be upto 30.9.1992 (but likely to continue).
(ii) the age of retirement will be sixty years.

II. Specialisations for the posts of Professor (Sr No 2) and Reader (Sr. No. 6) in Business and Commerce may be read as under :

"In any area of Business Management, Commerce or Allied subjects viz., Economics/ Statistics with requisite teaching experience as per U.G.C. norms provided it includes respectively atleast 5 and 3 years of teaching experience to post-graduate classes in Management/Commerce.

III. The total number of posts of Lecturers (Sr. No. 22) in Business & Commerce is four including two for Job Oriented Courses and two against leave vacancies (one likely to continue).

IV. Both the posts of Lecturers (Sr. No. 19) in Psychology are permanent.

LAST DATE FOR RECEIPT OF APPLICATIONS FOR THESE POSTS IS EXTENDED UPTO **31.8.1988.**

REGISTRAR

CLASSIFIED ADVERTISEMENTS

ALL INDIA INSTITUTE OF SPEECH AND HEARING

MANASAGANGOTHRI

MYSORE-570 006

Advt. No. 6/88

Applications are invited for the undermentioned posts in the above Institute :

(1) **Professor of Speech Pathology—One post.**

Rs. 1500-60-1800-100-2000/- (being revised). Reserved for Scheduled Castes / Scheduled Tribes. General Candidates will however be considered if there are no suitable SC/ST candidate.

(2) **Reader in Audiology—One post.**
Rs. 1100-50-1600/- (being revised).

(3) **Lecturer in Speech Pathology—One post.**
Rs. 2200-75-2800-EB-100-4000/-.
Reserved for Scheduled Castes.

(4) **Lecturer in Audiology—One post**
Rs. 2200-75-2800-EB-100-4000/-.

Age : Professor - below 50 years, Reader-below 40 years and Lecturer-below 35 years.

Full details regarding qualification, experience etc., along with application form may be obtained from the Institute on payment of Rs. 2/- each (Re. 1/- for SC/ST) either in cash or through Indian Postal Order by sending self-addressed and stamped (Rs. 1.40) envelope (9" x 4"). The last date for receipt of application is **12-9-1988.**

DIRECTOR

THE UNIVERSITY OF JODHPUR

(ESTABLISHMENT SECTION)

Advt. No. 77/88-89.

Date : August 4, 1988

Applications are invited on the prescribed form obtainable from the Office of Registrar, on payment of Rs. 10/- either in Cash or through IPO for the following posts so as to reach the office of the undersigned latest by **5-9-1988,** alongwith a self-addressed envelope of 24 × 11 cms. size bearing postal stamps worth Rs. 5.90.

1. **Deputy Registrar :** One Post.

Pay Scale : 2540-60-2600-75-3050-100-3650-125-3900.

Qualification

(A) (i) First or High Second Class Master's Degree from a recognised University.

(ii) At least seven years administrative experience in a position equivalent to Assistant Registrar involving supervision, control and planning.

OR

(iii) Five years teaching experience in a University or a post-graduate college.

OR

Ten years experience as Assistant Registrar in a University.

2. **Assistant Registrar : 3 Posts** (one post reserved for SC Candidate)

Pay Scale : 1720-40-2000-50-2300-60-2600-75-3050-100-3350.

Qualification

(A) (i) Bachelor's degree from a recognised University.

(ii) Experience of Seven years in a supervisory capacity in a University, Board of Secondary Education, Education Institute of repute or College of post-graduate standard.

OR

(B) At least 10 years experience in a supervisory capacity as Section Officer or its equivalent rank in a University.

Note

1. Dearness, House Rent, City Compensatory Allowances and Provident Fund will be payable as per University rules.
2. The University reserves the right to increase or decrease the number of posts. The University also reserves the right not to fill any or all posts if deemed necessary.
3. The University may call for interview only limited number of candidates. No TA and DA will be paid to candidates called for interview.
4. Applications should be accompanied by Indian Postal Order of Rs. 10/- (Rs. 2.50 for SC/ST candidates) payable in favour of Registrar, University of Jodhpur, Jodhpur.
5. Applications received after the due date shall not be entertained.

H.K.L. Khattar
REGISTRAR

REGIONAL ENGINEERING COLLEGE

SILCHAR (ASSAM) 788 010

Advertisement No. 2/88

Dated : 10th August, 1988

Applications are invited for the following posts :

1. Professor in Civil Engineering—One post.
2. Assistant Registrar (Academic)—One post.

Scale of Pay

1. Professor in Civil Engg.—Rs. 1500-60-1800-100-2000-125/2-2500/- P.M. (Unrevised).
2. Assistant Registrar (Academic)—Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200/- P.M. (Unrevised).

Requisite qualification and experience for the post of Professor in Civil Engg. : An eminent scholar with published work of high quality in the appropriate field, actively engaged in research. Ten years experience of Teaching and/or research. Experience of guiding research at doctoral level.

Or

An outstanding Engineer/Technologist with established reputation who has made significant contribution to knowledge.

Specialisation : In any one or more of the following fields : Environmental

Science Engg./Structural Engg./Transportation Engg./Water Resources Engg./Surveying/Soil Mechanics.

Requisite qualification and experience for the post of Assistant Registrar (Academic) : Essential—(i) A Bacholor Degree in Arts, Science or Commerce from a recognised University. (ii) Atleast 6 (Six) years experience in any academic Institution out of which atleast 4 (Four) years in a Supervisory position in administration of Students affairs, conduct of examinations and related matters and in organising student activities in an academic institution of repute.

Desirable : Should be proficient in independent correspondence in English and conversant with university statute and regulations.

Experience may be relaxed for candidate having higher academic qualification.

The candidates who applied for the post of Assistant Registrar (Academic) earlier against our Advertisement No. 1/1987 need not apply afresh.

Application in plain paper (Typed) giving full Bio-data, Date of Birth, Address for correspondence, permanent address, particulars of publications (in case of Professor in Civil Engg.) and details of present emoluments showing the pay-scale, present Basic-pay, D A. and other allowances together with a recent pass-port size photograph and Indian Postal Order of Rs. 10/- (Rupees Ten) and Rs. 5/- (Rupees Five) only for the candidates belonging to S.C./S.T. should reach the Principal and Secretary, Regional Engineering College, Silchar-788 010, Dist. Cachar, Assam by **15th September, 1988.**

Total emoluments of a Teacher at the minimum of the Scale including H.R.A. will be as follows : Professor—Rs. 3840/-.

The authority reserves the right to increase or decrease the number of post to fill-up or not to fill-up the post or to call only selected candidates for interview.

The persons who are in service should apply through proper channel.

For the post of Professor 1st Class Railway fare and for the post of Assistant Registrar (Academic) 2nd Class Railway fare by the shortest route will be admissible to the candidates for up and down journey for appearing in the interview. D.A. not admissible.

Selection Committee may recommend higher initial pay in deserving cases.

PRINCIPAL & SECRETARY

MADURAI KAMARAJ UNIVERSITY

MADURAI-625 021

Notification No. R/23/88.

Date : 2-8-88

Applications in the prescribed form are invited for the following posts in the University.

Biology

One Reader in Biology Tissue Culture.

One Reader in Fish Endocrinology.

One Reader in Genetic Engineering (Temporary upto 1990 under GERU).

One Lecturer in Genetic Engineering.

Bioinformatics

One Information Scientist (in the scale of Professor).

Biotechnology

One Professor/Reader in Chemical Engineering.

One Professor/Reader in Eukaryotic Gene Cloning.

Tamil

One Professor

One Reader in Gurunanak Devji Chair

Education

One Reader

Statistics

One Reader

Energy

One Reader

Academic Staff College

One Lecturer

P.G. Extension Centre at Palayamkottai

One Lecturer in Chemistry

Youth Welfare Department

One Programme Officer (in the Scale of Lecturer)

Scales of Pay

Professor : Rs. 1500-60-1800-100-2000-125/2-2500

Reader : Rs. 1200-50-1300-60-1900

Lecturer : Rs. 700-40-1100-50-1600

(The implementation of the U.G.C. scales of pay is under consideration).

Appointment of persons on deputation will also be considered, if the candidates are found suitable and the employer is agreeable to spare the services.

The prescribed form of application and full details regarding essential general and special qualifications and experience required can be got from the undersigned on requisition accompanied by

(a) a self addressed envelope with postage stamps to the value of Rs. 4.00 affixed thereon; and

(b) a State Bank of India challan for Rs. 20/- (Account No. 1 of the Madurai Kamaraj University) or Demand Draft for Rs. 20/- payable at Madurai drawn in favour of the Registrar, Madurai Kamaraj University, Madurai-625 021.

(c) Money orders and postal orders will not be accepted.

The notification number should be quoted in the requisition i.e. R/23/88.

The last date for receipt of filled in applications is **9-9-1988.** Applications received after the date will not be considered.

Dr. T. Sivasankaran
REGISTRAR

REGIONAL ENGINEERING COLLEGE

SILCHAR (ASSAM) 788 010.

ADDENDUM

Reference Advertisement No. 1/88 of this Institution. The fifth specialisation for the post of Assistant Professor in Electrical Engineering is added as "INSTRUMENTATION". Selection Committee may recommend Higher Initial Pay in deserving cases.

The last date of receipt of the applications for the above post is extended upto **15th September, 1988.**

PRINCIPAL & SECRETARY

JAMIA MILLIA ISLAMIA

JAMIA NAGAR, NEW DELHI-110025

CORRIGENDUM

It is to inform to all concerned that ....the pay scale for the post of Controller of Examinations at S. No 2 of Advertisement No. 3/1988-89 has been published as Rs. 4500-7300 whereas the correct pay scale is Rs. 1500-2500 unrevised. This will now read as undar :

"One Controller of Examinations
(Rs. 1500-2500 unrevised)
Permanent".

Khwaja M. Shahi
REGISTRAR

CENTRAL INSTITUTE OF ENGLISH AND FOREIGN LANGUAGES

HYDERABAD-500 007.

No. CIEFL/Admn./F.25/88 **Dated : 1.8.1988**

Advertisement No. XIII/88

Applications on the prescribed form together with the application fee are invited for the following posts in the Institute service (including the Nodal Agency set up by the UGC at the Institute) so as to reach the undersigned on or before **16.9.1988**.

Sl. No.	Name of the post with scale of pay	Unit/Section/ Department	No. of posts
1.	*Project Director (Rs. 4500-7300)	National Resource cum Documentation Centre (NRDC)	one
2.	Professor/Senior Fellow (Rs. 4500-7300)	Distance Education —German—	one
3.	Professor/Senior Fellow (Rs. 4500-7300)	Distance Education —Russian—	one
4.	Reader/Fellow (Rs. 3700-5700)	Distance Education —German—	one
5	Reader/Fellow (Rs. 3700-5700)	Distance Education —Russian—	one
6.	Lecturer/Associate Fellow (Consolidated Rs. 3,000/- per month)	Distance Education —German—	one
7.	Lecturer/Associate Fellow (Consolidated Rs. 3,000/- per month)	Distance Education —Russian—	one
8.	Project Associate/ Research Associate (Consolidated Rs. 3,000/- per month)	Multilingual Dictionaries in German	one
9.	Project Associate/ Research Associate (Consolidated Rs. 3,000/- per month)	Multilingual Dictionaries in Russian	one
10.	**Project Associates/ Research Associates (Consolidated Rs. 3,000/- per month)	National Resource cum Documentation Centre (NRDC)	two
11.	Translator (Consolidated Rs. 3,000/- per month)	German	one
12.	Translator (Consolidated Rs. 3,000/- per month)	Russian	one
13.	Lecturer/Associate Fellow (Rs. 2200-4000)	Dept. of Arabic	one
14.	Asst. Engineer (Rs. 700-1600) (pre-revised)	Administration	one (PLAN)

— The posts at Sl. No. 1 to 12 are under the UGC Nodal Agency Project in Foreign Languages. It is a 2 year time bound pilot project in Foreign Languages. NRDC is initially for a period of one year. The positions are purely temporary, ex-cadre.

* **Essential**

M.A. in Arabic / French / German/ Russian/Spanish/English/Mass Communication / Education/Psychology/ Master's Degree in Library Science.

** (a) M.A. in Arabic/French/German Russian/Spanish/English/Linguistics/Mass Communication/Education / Psychology / Master's Degree in Library Science.

(b) a good academie record.

Prescribed application forms and further details regarding qualifications etc. can be had from the Registrar, Central Institute of English and Foreign Languages, Hyderabad-500 007 by sending a postal order in favour of Registrar, CIEFL payable at Hyderabad-7 for Rs. 2/- (ps. 0.50 for SC/ST candidates) with a self addressed envelope (10×20 cm) duly stamped (Rs. 2/- (rupees two only) indicating the post which the applicant disires to apply for.

K. Jayashankar
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY

P.O. IIT, POWAI, BOMBAY-76

Advertisement No. C-226/87-88.

Applications on plain paper are invited from the citizens of India for the following permanent posts at the **Computer Centre** of this Institute. Persons employed in Government/Semi-Govt. Organisations or Educational Institutions should apply through proper channel. The posts carry allowances such as D.A., H.R.A. as per rules of the Institute which at present correspond to those applicable to the Central Government Employees stationed at Bombay. **Depending on qualifications and experience, a higher salary may be offered.**

Computer Centre has a most modern and sophisticated fourth generation main frame Computer System (Cyber 180/840). In addition there are a number of mini and micro-computing facilities. All these are used to take care of the computing requirements of the Institute and some other selected organisations.

Candidates called for interview will be paid first class railway fare from the place of their residence to the Institute and back by the shortest route. Also a candidate not found suitable for the post he/she has applied, may be considered for a lower post.

(I) SYSTEMS MANAGER

The incumbent will either be appointed in the pay scale of Rs. 1500-60-1800-100-2000 or Rs. 1500-60-1800-100-2000-125/2-2500 depending on the qualifications and experience of the candidate.

(The scale of pay is likely to be revised shortly).

Total emoluments on the minimum of the scale excluding H.R.A.	Rs. 3841/- p.m.

The SYSTEMS MANAGER will be responsible for the overall management of the Computer Centre and will assist the Head, Computer Centre in planning and management of the various facilities at the Centre. Specifically, his responsibilities include :

(a) Supervision of all the operational and maintenance requirements of the Centre.
(b) Interaction with the Computer users.
(c) Regular performance monitoring and tuning of the system(s) available at the Centre.
(d) Software acquisition and installation.
(e) Software development and maintenance.
(f) Planning and conducting short-term courses primarily for the Computer users.
(g) Planning and preparing relevant documentations for the Computer users.
(h) Attending to any other duties/responsibilities as may be assigned by the authorities of the Institute and the Head of the Computer Centre.

The SYSTEMS MANAGER will lead a team of Software Engineers and Operational staff. **He may be provided with accommodation on priority basis** on payment of licence fee as per the rules of the Institute.

Qualifications

(a) M.E./M. Tech./B.E./B. Tech. in Computer Science or in any field of Engineering with good academic.
(b) M.Sc. in Computer Science/Mathematics/Physics with good academic record.

Experience

The candidates should have at least 10 years of relevant experience, out of which not less than 3 years should be in systems programming and at least 2 years must be in a supervisory position. Some exposure to the internals of a contemporary operating system is essential. Experience with a large time-sharing computing facility is desirable.

Age Limit : Not exceeding 40 years.

(II) SOFTWARE ENGINEER

Scale of Pay : Rs. 1200-50-1300-60-1900 (likely to be revised shortly). The total emoluments on the minimum of the scale: Rs. 3451/- per month (excluding HRA).

The incumbent, in addition to assisting the Systems Manager will plan and carry out the following duties :

(a) Regular performance monitoring and tuning of the system(s) available at the Centre.
(b) Software installation, development and maintenance.
(c) Planning and conducting short-term courses primarily for the Computer users.
(d) Planning and preparing relevant documentations for the Computer users.

Qualifications

(a) M.E./M. Tech./B.E./B. Tech. in Computer Science or in any field of Engineering with good academic record.

OR

(b) M.Sc. in Computer Science/Mathematics/Physics with good academic record.

Experience

The candidates should have at least 5 years of relevant experience, out of which not less than 2 years should be in design of system and application of software for large systems. Some exposure to the internals of a contemporary operating system is essential.

Age Limit : Not exceeding 35 years.

(III) SENIOR PROGRAMMER

Scale of Pay : Rs. 700-40-1100-50-1600 (likely to be revised shortly). The total emoluments on the minimum of the scale : Rs. 2310/- per month (excluding HRA).

Qualifications & Experience

(a) Bachelor's degree in Engineering/M.Sc. in Computer Science with good academic record and at least three years experience in software and applications package development in reputed concern;

OR

(b) M. Tech. with specialisation in Computer Science with relevant project experience and good academic record;

OR

(c) M.E./M. Tech. in any discipline of Engineering with good academic record and at least one year experience in software and applications package development in a reputed concern.

Age Limit : Not exceeding 30 years.

Depending upon the availability, the Institute may provide residential accommodation on payment of usual licence fee etc. to the selected candidates for the post of Software Engineer and Senior Programmer.

Candidates who possess the requisite qualifications and experience may apply stating full name and address, date of birth, details of academic qualifications and experience with copies of certificates, testimonials, list of publications, if any, and the names of three referees with their postal address to the Registrar, Indian Institute of Technology, Powai, Bombay-400 076 on or before **1st September, 1988** along with a crossed postal order for Rs. 7.50. Candidates belonging to SC/ST communities need not send a postal order.

REGISTRAR

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FD52

University News

8th

MONDAY, AUGUST 29, 1988

Rs. 1.50

Prof. S.K. Agrawala, Secretary, AIU, awarding the Dr. B.L. Gupta Inter-University General Championship Trophy to Mr. D.K. Mudgal, Director of Physical Education, Delhi University. Seen on his left are Shri G.S. Sivia, Deputy Secretary, AIU and Prof. I.P.S. Monga, Chairman, Delhi University Sports Council.

ARCHIVES

The Computerised Library Management System

ARCHIVES is the first integrated computerised system for Management of Library/Resource Centres. It consists of Micro,Super Micro Computer Based System bundled with specially designed software to offer all the functions for management of any Library/Resource Centre. It offers the power of Mainframe Computers to run a library of any size or holding any type of material.........

The features offered include :

(a) **Books-Acquisition and Processing** : From maintaining a vendor file to performing preorder checks, printing of purchase orders, maintaining an Accession Register to printing catalogue cards in standard formats.

(b) **Periodicals-Acquisition and Processing** : Similar to the same function for books; having, in addition, a subscription renewal reminder, claims for missing issues, etc.

(c) **Information Storage and Retrieval** : Stores and processes information for material other than books and periodicals, e.g., microfilms, reports, audiovisuals, newspaper clippings, etc. Abstracts and subject bibliographies can also be stored.

(d) **SDI Services** : Enables a library to keep its users regularly informed of new material acquired by the library related to their specific interests.

(e) **Circulation Control** : Helps in maintaining circulation procedures like issues receipts, reservation, notices for overdue books. Also keeps circulation statistics.

(f) **Budgetary Control** : Keeps track of selected accounts for budgetary control, gives a periodic position of all accounts and generates revenue accounts statement.

This system can be tailored to suit any library, irrespective of the type and size.

ARCHIVES is simple to learn and use as the user is guided through all procedures with simple menus and prompts. The documentation which comes alongwith the system is comprehensive, properly structured and in simple language.

Efficient and systematic user training is provided to ensure smooth operation of the system.

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706, Maker Chamber V,
Nariman Point, Bombay—400 021.

Telephone Nos. : 234623/234643/234672

Telex—11-3465 VIKY IN

UNIVERSITY NEWS

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

8 SEP 19
F. T. R. I., MYSORE

Analysing Distance Learning Systems

K. G. Deshmukh*

"Challenge of Education : A policy perspective" presented to Lok Sabha in 1985 by the Prime Minister have clearly indicated the role of education in a rapidly changing national and international (Global) situation marked by new human needs and aspirations. It says..."Change rather than status quo, has become the watch word for successful living and education has been recognised as the tool for ushering in changes in an orderly manner. While education continues to be concerned essentially with individual development, its approach to this fundamental task is now conditioned by social concerns which have acquired a new significance with a view to reducing conflict and violence. Great wealth of experience has been accumulated about the modalities by which education can play the roles assigned to it. In this process, the concept of education itself has changed. It is no more confined to formal structures and institutions. The dynamics of expansion of knowledge has led to the concept of life long learning for the individual and the evolution of institutions of continuing education. A great deal has been discovered about the process of learning itself and its highly personalised character. The boundaries of the well-established disciplines of the past have given way to interdisciplinary teaching and research. New technologies have begun to be used widely both to enrich the quality and enhance the reach of education".[1]

This clearly indicates that our present system of education would have to be modified, so as to be widely open so that educational opportunities are made available to every one who wants education—children and adults, men and women, urban as well as rural and tribal population.

The new multifaceted education system suited to diversified interests of functionality cannot be confined to traditional structures and institutions. The system has to develop human resources for acquiring mastery over the skills and knowledge, areas essential for meeting the challenge of present technological society so as to improve the quality of life, both material and cultural. Education cannot be one time exposure to learning. It is "life long learning" : The concept adopted through 1972 UNESCO report, 'learning to be'. The concept embodies six important principles :

(1) "that dimensions of living experience must be restored to education by re-distributing teaching in *space and time*".
(2) "that education should be dispersed and acquired through multiplicity of means—the important thing is not the path an individual has followed, but what he has learned or acquired".
(3) "that the concept of general education must be broadened so that it definitely includes general socio-economic, technical and practical knowledge".
(4) "that educational action to prepare for work and active life should aim less at training people to practise a given trade or profession than at equipping them to adopt themselves to a variety of jobs, at developing their capacities continuously".
(5) "that life long education, in the full sense of the term, means that business and industrial firms will have extensive educational functions".

---

*Vice-Chancellor, Amravati University, Amravati.

(6) "that access to different types of education and professional employment should depend only on each individual's knowledge, capacity and aptitudes, and should not be a consequence of ranking or below experience gained during the practice of work".[2]

If taken seriously, the concept of life long education is a revolutionary idea of this century—which would include accessibility, institutional openness, need based learning, competency based education, cooperative education, and credits for prior learning. This, therefore, would mean that educational institutions will have to be developed as centres of life long learning; which probably will be extremely difficult.

The life long learning system envisages complete openness, as against relying completely on full time formal system. In India, the education commission (1964-66) sounded against the full time, formal system, saying :

"It has to be remembered that reliance on full time education as the sole channel of instruction often divides the life of an individual into 3 watertight and sharply divided stages; a pre-school stage of neither formal education nor work, a school stage of full time education and no work, and post school stage of full time work and no education. It is necessary to abandon the present policy of placing an almost exclusive reliance on full time education, and the two alternative channels of part time and own-time education should be developed on a larger scale at every stage and in every sector of education and should be given the same status as full time education. Secondly, adult and continuing education, which is almost totally neglected at present, should be emphasised to a very great extent. Taken together, these reforms would :

(1) enable those who have not completed a stage or education to complete it and, if they wish, to proceed to the next;

(2) help every educated person to have further education with or without formally enrolling himself in an educational institution;

(3) enable a worker to acquire knowledge, ability and vocational skill in order to be a better worker and to improve his chances of earning more; and

(4) help to refresh the knowledge of the educated person and enable him to keep pace with the new knowledge in the field of his interest."[3]

Towards Distance Education

The urge for higher education in industrial and post industrial society is increasing at phenomenal rate because of modern communication technologies. The report (1969) on UK Open University rightly says : "It is...unjust to the individual and unwise for the society to deny the greatest educational opportunity to the greatest number of its citizens. For long, regarded as the privilege of the few the opportunity to engage in higher education is atleast becoming widely accepted as a basic individual right. Moreover, education in general, and higher education in particular is, at one and the same time, a necessary condition of a modern technological society and defence against its abuse".[4]

New communication technologies are building up national and international information communication networks. The National Policy on Education referring to media and educational technology observes :

"Modern communication technologies have the potential to bypass several stages and sequences in the process of development encountered in earlier decades. Both the constraints of time and distance atonce become manageable. In order to avoid structural dualism, modern educational technology must reach out to the most distant areas and the most deprived sections of beneficiaries simultaneously with the areas of comparative affluence and ready availability".[5]

Because of planned development in communication technology, long standing assumption in higher education that information is a scarce commodity is no longer true. And hence the concept in the universities of teaching hours in their economic planning is getting blurred. As suggested by Dr. Morrison[6] learning hours is a better concept, for it opens up the possibility of self directed and other forms of learning and growth.

Distance education is emerging to prominence in different countries developed and under developed. This is because of number of fundamental changes occurring in the relationship between higher education and the society in which it is placed. These can be listed as follows :

(1) Traditional higher education no longer enjoys a monopoly on learning services.

(2) The distinction between education offered by higher education institutions, and training

offered by "industry" is difficult to maintain, and hence the roles and functions of educational institutions are increasingly blurred.

(3) Higher Education can no longer claim the full time commitment of students.

(4) Higher Education's basic assumption of an information deficit in society is being seriously challenged by new technology.

(5) There is continued incongruence between the reality of life long learning and institutional and system responses.[6]

From Access to Success

Distance learning system have been successful in demonstrating that increased access to learning can be obtained through such process. However, even today the system has more access to those who have good schooling and are academically well equipped. Hence the question arises, is their equal opportunity to all ? Removing barriers to access—time, space, cultural and social differences—has been the real concern of distance education. Flexible registration procedures, the use of communication technologies, regional centres, tutorial support and educational counselling services have to be used to remove access barriers and then only the distance education system would be a success. Equalising access does not necessarily equalise the chances of success for learners. Because of socio-economic-cultural differences of learners learning style will have to be modified to suit them. It is generally argued that, concentrating on *access and success* would generally lead to a decline in quality or excellence. But while thinking of imparting education in the system one must think of what is learned instead of how it is learnt. That is, disadvantaged students would take more time to learn than advantaged group. Hence quality or excellence should be thought of not in isolation, but at the level of outcomes. Thus in order to make the distance learning systems to be successful and purposeful, they must give equal opportunity to all in society, and must increase their efficiency in guaranteeing access and work in producing success. With these twin objectives in view 'innovative model' will have to be evolved so that distance learning system becomes really 'Open learning system'. The open learning system should be characterised by :

(1) The absence of a discriminatory entrance requirement.

(2) A result driven concept of equality.

(3) A success based concept of programme and service design.

(4) A multiple strategy and matching model approach to programme delivery.

(5) A developmental concept of quality.[7]

Learning Organisation

Distance education as an open learning system is unique in our educational world and requires organisational concept. It is an educational innovation. Its uniqueness rests in the management of how people learn. Models of distance education, then, reflect models of learning. Distance learning must be constantly innovative, finding out regularly new ways to link learners through processes to content. Institutions catering for distance learning must be innovative. The institutions at the university level must find out ways to accommodate traditional tendency within the academic culture with the innovative norms demanded by organisational culture. The need to develop appropriate and effective ways to manage this duality is most important.

Appropriate Model of Technology

Problems facing distance education is the need to develop a framework concerning the appropriate use of technology. New communication technologies give numerous opportunities for learning. Technology for the purpose is defined as the process of transforming inputs into outputs. The concept of technology is a social as well as mechanical process. All transformations of inputs into outputs occur in a social context and not in vacuum. Hence any decision taken or plans proposed for the introduction of new technology to the educational process must be undertaken with the social context of technology clearly in mind. In fact, what is really needed today are not more machine technologies, but more creative social technologies. The new technologies, like computers, satellite communication, video discs and telematic systems of various kinds increase not only the physical power of the human being, but his mental power and capacity. Technologies are created by human beings, even those applied to the transformation of person, and as such must be guided in their use by a basic humanism i.e. what is most appropriate and beneficial to the person. To do otherwise is to dehumanise the person.

The new information technologies bring four elements together : Store information in vast amounts, process that information to logical procedures, display such information in multiple formats and send such information to multiple receivers. Because of these abilities of new technologies, one can conclude that this technology can perfectly stimulate human thinking. There is, however, a vital difference between what new technologies do when they process, store, send and display information and what human minds do when they think. If these differences are not recognised, they might lead to a tragedy rather than a triumph. The reason for this being that the mind thinks with ideas and not with data. And the development of the thought process of a person is a universal goal of education. Our goal in distance education must be to use new technologies to assist in a human based learning process.

The introduction of new technology into an existing distance education system should not be undertaken, as a result, without due attention to the fact that this will not only change the distance education system, but affect as well, the larger ecological system of which distance education is a component.

Planning for the introduction of new technology in distance education, therefore, should not be restricted to the distance education system or technology itself. It is the entire ecological system which should be thought of in bringing about the changes.

After analysing the system of distance education, now we turn our attention to the present status of distance learning system throughout the world.

Distance Learning Models at University Level

Distance learning method at the university level is very old. In earlier days universities in UK and also in India had no teaching functions, but merely registered and examined students for external degrees. Even university started providing correpondence education facilities to external students. Today, by and large conventional universities while providing teaching in colleges/university teaching departments have correspondence tuitions in some faculties. A massive centralised state provision for correspondence education at all levels, including university level is provided in France.

The most recent development is the innovative model of distance learning, using a variety of combination of distance teaching methods to provide specially prepared multi-media courses and with formal responsibility of evaluation and accreditation. The first of this new generation of institutions is Britain's Open University with no formal entry requirements, and the 'openness' of its teaching. During the last ten years, autonomous distance teaching institutions have been established in a number of countries. These institutions include the Free University of Iran, Everyman's University in Israil, Pakistan's Allama Iqbal Open University, the Fernuniversitat in West Germany, the National University for distance education (UNED) in Spain and the universidad Estatal a Distancia (UNED) in Costa Rica, the National Open University in Venezuela (UNA), Athabasca university in Canada, the Radio and Television university of China. The other developed and developing countries in the would like Thailand, Indonesia, Holland, Columbia, Bolivia and others have established open university systems as a major principle in development. In India first open university was established in Andhra Pradesh and other states in the country could start open universities. The National policy on education recognised the importance of open university and distance learning and also the role of media. It says : "The Open university system has been initiated in order to augment opportunities for higher education and as an instrument of democratising education. The Indira Gandhi National Open University established in 1985 in fulfilment of these objectives, will be strengthened. This powerful instrument will have to be developed with care and extended with caution".[8]

There are number of general features common to these institutions: the teaching, assessment and accreditation are integrated, Institutions are committed to distance learners, hence academic staff have no conflicts between internal and external students, and there is a strong motivation to develop and enhance distance teaching methods free from constraints and traditions of face-to-face teaching and are free to devise new educational programmes for new target groups.

Distance Learning Systems

The term 'distance learning system' is used here to indicate projects that attempt to develop the full potential of distance learning models, without relying on traditional educational structures.

(i) Key features of the system concerning students are :

(a) Opening of opportunity for education to new target populations deprived previously because of geographical isolation, lack of formal academic requirements, employment conditions or socio-economic-cultural background.

(b) The identification of particular target groups with their key characteristics—need, age, time available for study, local facilities, etc.—

to enable appropriate courses, learning methods and delivery systems to be devised for them.

(ii) Factors Concerning Learning Material are :

(a) Flexibility in the content and the curriculum of the learning materials through modular structures or credit system.

(b) Formulating learning objectives, self assessment devices and designing learning materials.

(c) Planning use of communication media and other resources suited to the needs of students. This may include correspondence lessons, newspaper supplements, radio and TV broadcasts, audio and video cassettes, films, computer-assisted learning kits, counselling and local tuitions, self help groups of students, lending library facilities and so on.

(iii) General Features of Distance Learning Systems :

(i) Great flexibility in teaching methods and student groups covered as compared to conventional education.

(ii) Production in bulk of learning materials, such as, texts, kits, broadcasts and so on, and system search for and use of existing infrastructure and facilities available in higher education—libraries, broadcasting organisations, space, printers and publishers, etc.

(iii) Lower recurrent unit cost per student than conventional class-room teaching and lower capital cost per student.

The Organisational Structure

The organisation structure for distance learning by and large, is common and is shown in *Figure 1* as developed by Miller & Rice .[9]

Two major operating systems are distinguished in distance learning institutions :

(i) Course subsystem is concerned with design, production, distribution and reception of the teaching materials used by the Institution.

(ii) Student subsystem which admits students, allocating them to courses, local centres, tutors and counsellors, collection of fees and ensuring that they receive teaching material, administering assessment and examination processes, issues certificate to successful students and maintaining students records. This subsystem, is essentially an administrative one involving management and control of students and their progress through the institution.

Decision on Distance Learning

Figure 2 indicates flow chart regarding the minimum consideration that require to be *taken* into account to establish whether or not a distance learning system be adopted to cope with a given educational need. As the first decision point in this sequence, one has to decide whether existing educational system is meeting the important educational needs of a specific discipline and of the population, if not whether in future such needs will be met by expanding existing provision.

Indicators that the conventional system is inadequate at the post secondary level might include :

(i) Inadequacy of existing provisions to cope with current demands and needs;

(ii) Inadequate provision of non formal and/or part time educational opportunities for adults;

(iii) Inaccessibility of existing facilities for large population due to distance, time or cost factors;

(iv) Inappropriateness of existing facilities to the aspirations of large sectors of population or to societal needs ; and

(v) Low status and standard of teaching profession.

If above indicators are accepted as failure of the conventional system and decision is taken to adopt distance learning system, issues will have to be considered in respect of target population and courses. First issue will be whether potential students are capable or motivated to learn independently. The criterion relating to target group might include :

large numbers,

distribution over a large area,

heterogeneous composition (age, occupation, etc) ; and

Inability to use conventional provision—reason being employment, distance, cost, age, inadequate formal education, etc.

Second issue regarding courses will be standardisation of learning material is acceptable, and that communication facilities exist or can be devised, for getting materials to students in proper manner. Criterion might include :

Lack of well qualified teachers in sufficient number,

Inadequate funds for expansion of conventional provision and recurring cost of teachers' salary,

Urgent need for training and retraining courses in specific areas, particularly for working adults, and

Difficulties faced in modifying the conventional provisions to cater to the needs of specific groups.

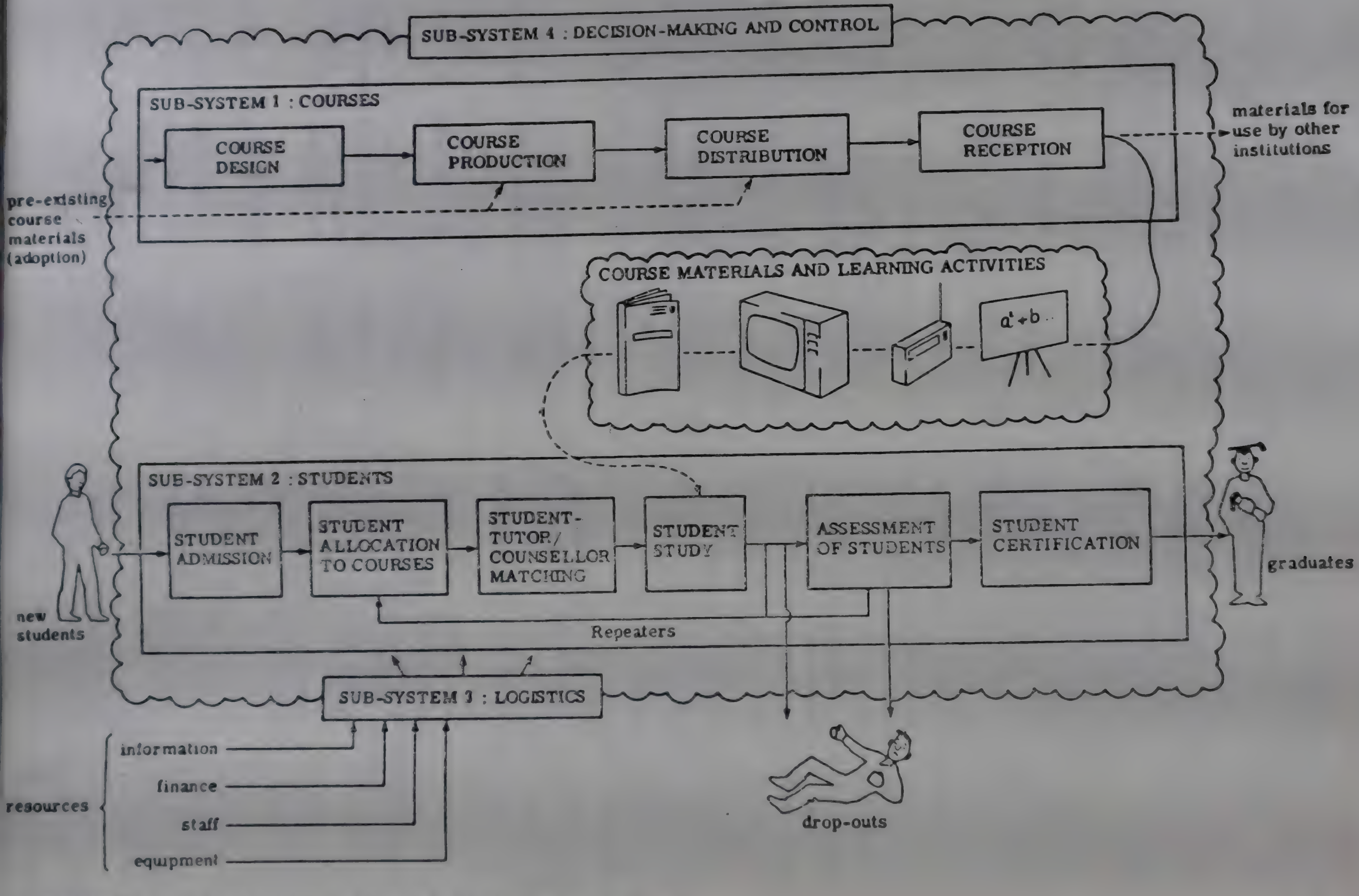
SUB-SYSTEM 4 : DECISION-MAKING AND CONTROL
SUB-SYSTEM 1 : COURSES
COURSE DESIGN
COURSE PRODUCTION
COURSE DISTRIBUTION
COURSE RECEPTION
materials for use by other institutions
pre-existing course materials (adoption)
COURSE MATERIALS AND LEARNING ACTIVITIES
a² + b ..
SUB-SYSTEM 2 : STUDENTS
STUDENT ADMISSION
STUDENT ALLOCATION TO COURSES
STUDENT-TUTOR/ COUNSELLOR MATCHING
STUDENT STUDY
ASSESSMENT OF STUDENTS
STUDENT CERTIFICATION
Repeaters
new students
graduates
SUB-SYSTEM 3 : LOGISTICS
resources
information
finance
staff
equipment
drop-outs

FIGURE 1 A systems view of distance learning.

SEP 1988
C. F. T. R. I., MYSO

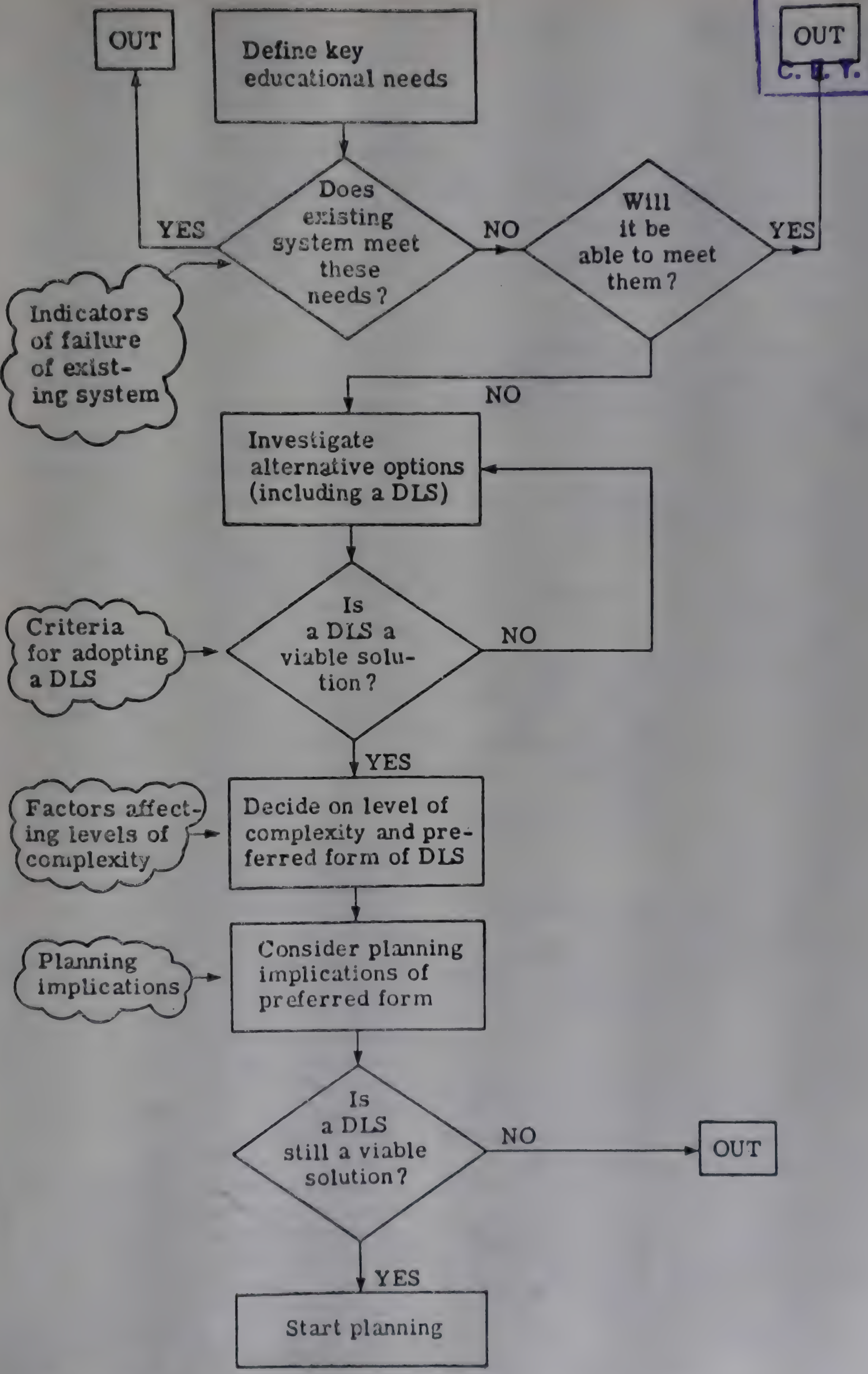
OUT
Define key educational needs
Does existing system meet these needs?
YES
NO
Indicators of failure of existing system
Will it be able to meet them?
YES
OUT
NO
Investigate alternative options (including a DLS)
Is a DLS a viable solution?
Criteria for adopting a DLS
NO
YES
Factors affecting levels of complexity
Decide on level of complexity and preferred form of DLS
Planning implications
Consider planning implications of preferred form
Is a DLS still a viable solution?
NO
OUT
YES
Start planning

FIGURE 2 Taking a decision on distance learning.

Complexity of the System

What kind of distance learning system ?

After taking a decision on creating a distance learning institution, it is necessary to consider the features which will influence its organisational complexity due to capital and recurrent costs. This can be done with respect to two operating subsystems—Courses and students—identified earlier to find out how they interact with each other to determine the complexity of the whole system.

Table 1, indicates main critical factors in the course and student subsystems, and their implications in terms of cost and complexity for the regulatory and logistical subsystems.[10]

TABLE. 1. Factors affecting complexity and cost of Distance Learning Systems.

System	Critical Factors	Implication for
	No. of Courses	Staffing level for preparation and maintenance. Production equipment. Transmission requirements. Storage & distribution.
	Media used (Print) Radio, TV,'audio-visual kits, etc.	Special production. Specialist staff. Transmission, distribution, storage.
Course subsystem	Degree of integration of media & components	Preparation time & staffing levels Co-ordination of distribution of different media.
	Quality of course materials (academic, Professional, pedagogical)	Preparation and revision time (Staffing Levels) Quality & Commitment of staff.
Student subsystem	Number of students	Student unit costs/course Distribution of Materials Student records. Examinations & assignments. Tutorial counselling provision.
	Course choice	Students unit costs/course. Number per course prerequisites. Course/student records. Scheduling of examinations.
	Nature of admission requirements	Levels of demands Heterogeneity of student population dropout rates need for support.
	Level & nature of support	Numbers of local centres Numbers of tutors and counsellors. Identification of recipients of special support. Training of tutors/Counsellors.
	Nature of assessment procedures	Recording grades Numbers and distribution of tutors Conduct of examination.

In looking at the course subsystem, design, production, distribution and reception of course materials are the elements that need be considered. If number of courses are more and more sophisticated, the media used, the complexity of the system and capital cost will increase. Use of radio and TV would involve the cost of equipping studios and there by increasing organisational complexity. More costly systems would bring together professionals and experts from widely different fields, thereby increasing organisational complexity of the project.

As far as student subsystem is concerned, the numbers, geographical distribution, heterogenous student group with differing problems and needs would increase complexity of the system. However the system will have to respond to such situations and create special counselling and support schemes. Regular assessment of these students will be another problem which would need careful thinking. Each of the activities has significant cost implications.

Comparison with Conventional Methods

Some of the main differences between distance learning and conventional systems are given in Table 2. They can be summarised as :

TABLE No. 2 Comparison of Conventional and Distance Learning Systems.

Dimensions	Conventional system	Distance Learning system
1. Students	Relatively homogeneous (age & qualification) Same location (Class room) Dependent Learners Controlled situation	Heterogeneous Scattered at a distance Independent learners Relatively uncontrolled
2. Students Records	Do not need to be highly developed nor very detailed.	Accurate student records essential (addresses, allocation to tutors, assessment grades, correspondence, etc.)
3. Student Support	Built in face to face teaching.	Need for special provision of local counselling services to help students with learning problems so as to minimise drop-outs. To design a proper set up to bridge the gap between students and Central Institute.
4. Student assessment & accreditation.	Problems of reliability & validity are minimal Relatively cheat proof	Assessment at a distance increases problems of validity. Use of large number of tutors decreases reliability. Impersonation and cheating is a potential problem (Credibility)
5. Media/Methods	Essentially face to face teaching Teaching skills needed fairly well defined. Labour intensive	Essentially Media teaching Media/Method skill needed is generally not available. Capital intensive
6. Courses	Well defined, few, relatively simple. Many options/courses with few students in each-high cost Initial start up cost-less.	More complex-course creation Production and distribution processes with specialised staff. Tendency for few options initial cost--high reduces with increase of students.
7. Organisational set up	Majority of teachers in schools and colleges are available. Little administrative support required.	Strong administrative framework needed to link together student support and record functions, course creation functions, course production and distribution functions. Specialist functions need to be carried outside DLS (e.g. Printing, broadcasting).
8. Control & Regulation	Conventional problems of planning, evaluation, decision making.	These problems are magnified and in certain cases qualitatively different (e.g. multimedia nature, integration of multi media production - distribution and teaching systems imposes production control).
9. Cost structure	Basically labour intensive, related to number of students, unit cost per student per year do not vary significantly with number per course.	Basically capital intensive, related more to course creation and production Unit cost per student/year drop out significantly with increased numbers per year.

Concerning Students

The importance of accurate and accessible student records.

The need for mechanisms of communication between students and staff.

(Continued on page 12)

Towards a Commonwealth of Learning

Report of the Expert Group on Commonwealth Cooperation in Distance Education and Open Learning

(The Briggs Report, 1987)

Summary

The Challenge

Communications technology makes possible an expansion of educational opportunities by overcoming barriers of distance and remoteness. It enables learners, no matter how remote, to tap the full richness of Commonwealth educational resources. The recent advances in technology, including satellites and computers alongwith the well tried but changing technologies of print and broadcasting, come at a time when education is facing continued challenges of expanding demand and constricted resources. The convergence between the world wide educational need to extend educational opportunities and the expansion of communication channels through which such needs can be met forms the background to recent developments in distance education on both a national and international scale.

Distance education programmes, in which students study through print, often in the form of correspondence courses, recordings and broadcasts, with limited amounts of face-to-face study, have been used successfully for various purposes within the Commonwealth; for nonformal education, at secondary level, to provide inservice training, and for various kinds of post-secondary education. Evidence on the effectiveness of these programmes indicates that they can be successful and frequently show economies as compared with conventional face-to-face education.

Needs and Opportunities

Distance education has proved of value to individual learners, to employers, to colleges and universities and to government ministries. It makes it possible to widen access to education which has particular value for those remote from an educational institution that can offer the subjects of interest to them. Part-time study made possible through distance education has major advantages both for individuals and for employers by offering education and training without taking students out of the work force. Distance education is of special value to women where their personal circumstances or economic or social pressures make it impossible for them to attend a college or university full-time. As well as widening opportunities for individuals it can be used to address key shortages of manpower. It can help colleges and universities both to reach new audiences and, through the careful use of well prepared teaching material, to widen the range and raise the quality of their teaching on campus.

The same forms of communications technology which make it possible to reach students at a distance within any one country also make possible an international sharing of resources. Students can, in principle, follow a course from an institution outside their own country. Universities can share their teaching through satellites. International cooperation through distance education can supplement conventional forms of student mobility.

In post-secondary education there are educational needs of many kinds which distance education can address, and to which international co-operation is relevant; some are for technical education, some for diplomas and some for degrees. For, while distance education has expanded rapidly over the last quarter century, opportunities to study at a distance remain narrow but could be widened through programmes of Commonwealth co-operation. Through such co-operation the member countries of the Commonwealth can take advantage of distance education's power to cross frontiers and to make the richness of their educational resources available to all. As distance education demands investment in the creation of learning materials there are economic arguments for sharing the costs of this investment between several countries and institutions. The subjects in which the priority needs of individual countries are similar enough for co-operation to make sense, include accountancy and business management, agriculture and rural development, the sciences, teacher education, information technology, technical and vocational training, and English and other international languages.

Technological Opportunities

A battery of different communications technologies can be addressed to the problems of widening access to education and raising its quality. Print where recent technical advances have reduced its costs and widened its versatility, remains of key importance. Audio tapes have been widely used to support distance education and have major cost advantages over video technologies. At the same time, the rapid spread of video recorders makes video an important medium for institutions and, in rich countries, for individuals. The use of computer-based technologies, which make possible electronic mail and facilitate access to data bases, have important applications for institutions throughout the world. Universities have begun to demonstrate the potential for satellite communication, especially in regions like the Caribbean and the South Pacific where they offer unique possibilities of regular two-way communication. Common features of the development of communications technology are that costs are falling, and that access to a range of different media is widening. At the same time, the effective use of the available technologies requires specialist knowledge and skills which are scarce, especially in small countries.

Patterns of Co-operation

The promoting co-operation through the use of communications technology, the Commonwealth has five advantages; its membership by both developed and developing countries; its common language; the shared traditions and assumptions of much of its higher education; the richness of the educational resources which it can tap; and the lead which has been taken by Commonwealth countries in developing distance education. Individual Commonwealth countries already have experience of sharing information and sharing resources for distance education within their frontiers. At an international level there is some experience of sharing materials and information and of arrangements that allow students to enrol on courses in a different country. The expansion of co-operative arrangements of these and other kinds rests on this experience; it needs also to take account of the limits of what has been achieved so far, constrained as they have been by scarcity of resources, by a degree of academic scepticism about the process of distance education and by practical difficulties with, for example, copyright and the effective sharing of information.

Experience of existing co-operative programmes, and an examination of Commonwealth needs, suggests that there is scope for Commonwealth co-operation in three broad areas. The first is for materials and course development, whether teaching materials can be shared, or new materials created, to meet widespread and significant educational needs. The second is in supporting individual students by arranging for mutual accreditation procedures for qualifications offered at a distance and by working with Commonwealth distance-teaching institutions in developing their tutorial and support services. The third is in institutional development where colleges and universities teaching at a distance can benefit by sharing in staff training, in the use of communications technology for two-way links for teaching and research, in information and in common programmes of research and evaluation.

To meet these needs effectively calls for a bold Commonwealth initiative which might take one of a number of forms. One possibility is for an information service whose main purpose would be to share information about distance education within the Commonwealth. A second possibility would be a brokerage service which shared information in the same way but went slightly further in fostering co-operative activity between Commonwealth distance teaching institutions. A third option would be an agency with wider functions, able to undertake activities in materials development, in support for students and in institutional development. A fourth is for a Commonwealth Open University which included the functions of the previous options but also enrolled and taught individual students throughout the Commonwealth.

The Proposal

There are powerful arguments for the third of these options : an institution which would work with and through existing Commonwealth colleges and universities but would have powers of initiative and action appropriate to the scale of the educational needs to which it was a response. Its programme would be determined by the key manpower needs to which Commonwealth co-operation can be addressed; courses for external students, to ease success to higher education, to foster student mobility and to support continuing education. It would work with and through existing Commonwealth universities and colleges but not itself seek to enrol students directly. Thus it would provide teaching through a network of existing institutions, enabling them to teach more widely and more effectively, and would appropriately be called the University for the Commonwealth. It would have a programme for acquiring course material from existing colleges and universities and making this widely available throughout the Commonwealth, and a programme for developing new materials, mainly in co-operation with existing institutions. It would develop a framework for mutual accreditation procedures that would facilitate the sharing of materials, and, by ensuring the acceptability of qualifications, ease student mobility, between Commonwealth countries. Through its programmes of institutional development it would assist both colleges and universities that are already teaching at a distance and those that are embarking on such programmes.

The proposed University would have a small nucleus of staff, building up from about 20 professional and administrative staff to about 60 over a period of five years. It would not itself employ large faculties of academic staff but would arrange for small teams of subject specialists to be recruited, generally on secondment, to work with academic staff members in other institutions. Thus, especially in the development of teaching materials, much of its work would be decentralised. The University would have a small governing body, whose members would serve in a personal capacity, but would be broadly representative of the Commonwealth. The University would need a location with good communications facilities, both for actual movements and for communications links, with an adequate infrastructure of services, where it could be assured of government support and would have easy access to Commonwealth resources. First estimates are that its expenditure would rise from £3 million in the first year to about £9 million in the fifth year; as its services developed so would the possibility of recouping expenditure by charging participating institutions for services. Such changes might be in some cases be met by donor agencies.

The establishment of a University for the Commonwealth on this scale is a bold proposal but one which is necessary if the opportunities presented by advances in communications technology are to be seized for the benefit of learners throughout the Commonwealth, for the benefit of manpower development, for the benefit of Commonwealth colleges and universities, and for the benefit of the Commonwealth itself. Given the appropriate mechanism, the Commonwealth can now share its educational resources in a way that has never before been possible. That is the purpose of this proposal. □

Analysing Distance Learning Systems

(Continued from page 9)

Requirement of local support and tuition facilities to be made available.

Requirement of building, careful procedures into the assessment system if credibility of degrees, diplomas are to be maintained.

Concerning Courses

The need for specialist trained staff to prepared courses, and the availability of existing course materials which can be adopted.

Desirability of starting with a small number of high population courses for economic consideration;

Need for strong but flexible organisational structure to link the academic and operational activities associated with the creation and production of courses. □

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The Great Surge Forward

"The world is not a static place. It is transforming rapidly, particularly as a result of the revolutionary advances in science and technology. These advances have brought about profound transformations in many areas of the material world", said Prof. M.G.K. Menon, Scientific Adviser to Prime Minister and Member, Planning Commission. Prof. Menon was delivering the Convocation Address at the Fortieth Convocation of the Panjab University, Chandigarh "To ensure that one is an integral part of the great surge forward of human creative activities", he added, "it is important to keep pace with the changing scenario and not be left behind". Excerpts

Convocation

In speaking to those who have taken their degrees and are moving out into the world, to seek employment, to serve society, and most important to use their training and creative abilities to the fullest extent, the first message that I would like to convey is that education has to be a life long process of renewal : of continuing to sharpen ones attitudes and methods, of increasing one's understanding, of gaining wisdom and knowledge, to ensure that one is an integral part of the great surge forward of human creative activities in all fields. The world is not a static place. It is transforming rapidly, particularly as a result of the revolutionary advances in science and technology. These advances have brought about profound transformations in many areas of the material world. These have opened up new opportunities as also new challenges, and provided new solutions but also created new problems. To deal with these effectively, it is important to keep pace with changing scenario, and not be left behind.

Nuclear Era

In 1945, the world witnessed a transformation from the age of chemical energy, characterised by electron volts to nuclear energy characterised by million electron volts; this was a transformation by a factor of a million. It is sad that such a revolutionary developmenr was heralded by the dropping of atomic bombs over Hiroshima and Nagasaki in August, 1945. Since then, nuclear arsenals have been built up, on a scale sufficient to destroy the world many times over. We live today in fear of a nuclear holocaust, with the scale of vertical nuclear proliferation that has taken place, and of horizontal proliferation that is coming about. There was great hope that this million-fold increase in energy capabilities would provide unlimited amounts of power which would radically transform the energy availability in developing countries. Nuclear power reactors are a reality: but there have been increasing public fears of safety, hazards of radio-activity and radiation through accidents and miscalculations, of dealing with nuclear wastes, and the cost and time overruns in providing this energy. The net result has been that the impact of nuclear energy on the developing world has far been minimal.

Advances in Space

In 1957, one witnessed humankind's ascent into space with the launching of Sputnik. There have been spectacular achievements in this field since then, with notable events such as planetary exploration using unmanned spacecraft, of men stepping on the Moon, which was witnessed by hundreds of millions of people simultaneously on their TV sets all over the world and more recently of a highly precise rendezvous with Comet Halley. As a result of advances in space technology, the fields of space based telecommunication, radio and television broadcasting, and remote sensing have become every day realities. Intercommunication between human beings all over the world is now no longer based purely on mechanical systems with their characteristic slow speeds and limited density of information e.g. runners, horse and animal drawn vehicles, automotive and railway systems or supersonic jet aircrafts. This interaction today takes place on an easy and inexpensive basis, at the speed at which electrons and electromagnetic waves travel. Whether we deal with telecommunication for voice communication, telex and fascimile systems for written communication, the spoken word through radio, or audio-visual messages through television and video systems, we can say that this now takes place close to the speed of light and with enormously denser information packaging.

Electronics, Telecommunications and Informatics

The opening up of the field of solid state electronics, with the discovery of the transistor in 1947, followed by integrated circuits going upto the very large levels of integration possible today, and geometries of a micron or less, have revolutionised electronics. This has enabled us to reduce weight, volume and power requirements, and to increase speeds, functional capabilities and reliability of electronic systems; as a result, they have now become all-pervasive, entering every facet of human life and endeavour. One now sees the power of digital computation from the smallest of pocket calculators to the large super computers, taking us upto the area of artificial intelligence. Instead of the complex systems languages earlier used, we can now interact with computing systems through commonly used language, indeed with speech inputs, making these systems wholly "user-friendly." These systems are all essentially based on digital logic, with the binary system of just two digits, zero and one. With these new possibilities, opened up by solid state electronics, telecommunications have also become digital; and this has made possible the coming together of computer and telecommunication systems. Increasingly, mechanical and electro-mechanical, as also pneumatic systems, are being replaced by electronic systems. As a result, we now have a complete loop in real time from electronic sensing and measuring, to communication, storage and computation of data, comparison with expectation or prediction, correction through control systems and communications, and then the feedback through the original sensors. It is these developments that have enabled the revolutionary advances in space technology and telecommunications. These capabilities are increasingly making their way into the areas of industry, offices, services, homes, and in a sense into the daily life of each individual. This is the Age of Informatics. From the earlier ages of humankind, characterised by materials of various types, we moved to the age of Industry and Energy, and are now in the Age of Informatics. This is of profound significance for the structuring and functioning of society, the nature of production, employment, services and so on.

New Materials

Through basic understanding in physics and chemistry, it has become possible over recent decades to develop a whole new range of materials, e.g., plastics, polymers, alloys, ceramics, composites and the like, which can be tailored to end-use requirements and economics. One is familiar with the ubiquitous plastics bucket, which can be seen in the remotest of our villages; but remember that this is only four decades old. Capabilities relating to new materials have been fundamental to the developments that have been taking place in the fields of electronics, nuclear energy and space among others. Totally new opportunities are now opening up in the field of ceramics. A spectacular event in this area was the discovery, less than two years ago, in the field of high temperature super-conductors, based on ceramics In time to come, in the field of energy technology, this could be as profound a move forward as caused by the discovery of the transistor and opening up of solid state electronics in 1947. The opportunities arising through materials that can transmit electricity with no resistance, at temperatures which can be dealt with easily, are mind boggling. Electricity generation, transmission, traction, electronic applications and the like will get totally transformed when these developments become truly practical.

Modern Biology

And yet, with all these developments, there are many who would say that what lies ahead is the new Age of Biology, with increasing understanding of life processes, structures and functions at the molecular and cellular levels. The discovery of DNA, the capabilities relating to recombinant DNA technology, work on hybridomas and immunology and in developmental biology have opened up totally new vistas in biomedical sciences, agriculture and industrial production. New areas relating to the human brain and neuro-biology are now being explored. We knew earlier that everything in the universe is built up of basic blocks, the chemical elements. We now know that all life is built up of basic building blocks put together in an order which contains the set of instructions which defines how the ultimate living system would look like and function. We thus see a basic unity in all living matter. These fundamental discoveries of modern biology should be taught to all students, to convey a feeling of how all human beings are the same except for minor changes in the instructions that define build, skin, colour, etc; and indeed how closely we are related to the birds, animals, and plant and animal life in general.

Transportation

On a different plane, one has seen a total change in transportation systems, with the advent of wide-bodied jet aircrafts, moving millions of human beings around the world across national boundaries. Thus, with radio, telecommunication, television, and modern transport systems, the world has indeed become a small place. We also know that it has become a highly inter-dependent place, with movement of materials, services, goods and people. We thus live in an increasingly inter-dependent world. And everything that I have said for the world will apply to our country, which is a mini world of sub-continental dimensions.

All that I have described has taken place in the last four decades since World War II or Indian Independence. And all of it is directly related to advances in science and technology. There is no other, field of human creative activity in which such rapid revolutionary developments have occurred.

The Limitations

These advances, that have taken place in much less than one human life span, have brought human beings in individual countries, and between countries, so close; and made the world so inter-dependent. And yet, how is it that we see so much compartmentalisation, factionalism, and parochialism, based on nationalism, religion, regionalism, language and such other considerations. This is an area for major sociological analysis. Perhaps the answer lies in the fact that whilst these advances and transformations are taking place, they are leaving unaffected a very large part of the world, that we refer to as the developing countries; and even within them the fruits of these advances are limited to the upper crust of society. In spite of the great powers of modern science and technology that I have just described, one can see in vast parts of the world, scenarios that have remained unchanged over thousands of years; of life at subsistence levels, of grinding poverty and degradation, of famine, being subject to the vagaries of nature, of static hierarchical societal systems and the like. The advances resulting from science and technology have clearly to be rapidly spread to the grassroots more evenly and with equity.

Pope John Paul II has said (1983) :

"Peace is born not only from the elimination of hotbeds of war. Even if all these latter were eliminated, others would inevitably appear, if injustice and oppression continue to govern the world. The intention to direct science to the promotion of justice and peace demands a great love for humanity. Every human virtue is a form of love. This is the case, in particular, of justice, which is love of neighbour, of individuals, and of peoples. Only the person who loves wants justice for the other person. The person who does not love seeks only to obtain justice for himself."

Impact of Science and Technology on National Development

I must, at this stage, hasten to point out that in the Indian experience, over the past four decades since Independence, there is ample evidence of the application of knowledge and methods based on modern scientific and technological advances, to bring about improvements in the quality of life of our people. I shall only give a few examples.

The population of India in 1901 was 238 million. It increased relatively slowly, at a rate of 0.83% per annum, over the half century 1901-1951, and reached a figure of 361 million in 1951. This slow rate was essentially because of frequently recurring famines with food shortages and malnutrition, and epidemics of various types. However, between 1951 and 1985, the population grew at little over 2% per annum, with indications that in the decade 1971-1981, the rate was as high as 2.25% per annum. This has been largely a result of increased availability of food, and control of diseases. Specifically, life expectancy increased from 32.1 years in 1950-51 to 54.4 years in 1980-81 and is estimated to be 56.5 years in 1984-85; the figures of infant mortality have gone down significantly, though they are still much too high at the average national level infant mortality came down from 124 per thousand live births in 1970 to 104 in 1984; small pox has been eliminated; and there are major programmes for the control of many communicable diseases.

In the area of foodgrain production, from 52 million tonnes in 1951-1952, and 72 million tonnes in 1965-1966, we have reached a figure of over 150 million tonnes in 1985-1986. This was due significantly to the high yielding varieties programme, referred to as the Green Revolution, which had its origins in scientific and technological capabilities in the country in genetics and plant breeding, with the ability to take advantage of new inputs from outside; and evolving of technology packages, including dissemination, extension and technology transfer. As a result, the country has become largely self sufficient in foodgrain production, and been able to meet situations like the severe drought of the past two years.

At the time of Independence, India had a nascent industrial structure, based on individual examples of exemplary entrepreneurs, largely confined to a few textile mills, the steel plant at Jamshedpur, certain basic extractive sectors and the like Today India produces practically all the items needed for the daily life of its people through industrial production in the country. A substantial base of industry and industrial production has been set up. In recent years, industrial growth has reached a highly satisfactory figure of around 10%. There are many sectors of our industry, for example, electronics, oil and petrochemicals, etc., in which there is major impact of indigenous capabilities in science and technology.

Significant capabilities have been built in science and technology, particularly in areas of nuclear, space, electronics, defence and certain industrial technologies which, if they could be enlarged on a significant scale, will bring about a major transformation. We have many achievements to our credit in these areas. Indeed, if one looks at Indian history in recent times barring those occasions where the nation stood together against external aggression, and applauded our success, such as in the 1971 hostilities with Pakistan, I can recount unqualified applause from all sections of society, and from all of shades of political and other opinion, only in the case of our visible scientific achievements, such as the peaceful nuclear explosion at Pokhran, the launching of Aryabhata or IRS 1, the successful SLV launch, testing of the Prithvi Missile, and so on.

Thus one has evidence of significant changes on the national scene in a macro-sense, as a result of scientific and technical inputs. But in terms of true self-reliance, modernisation and technological upgradation at grassroot level, we have a long way to go. This involves both programmes to propagate the scientific temper, covering objective, rational approaches and attitudes, as well as the development of capabilities and technologies that would directly benefit the individual citizens of our country, particularly in the rural population, and those in the poorest strata of society. This is the transformation that has to be brought about for scientific and technological growth to take off, in terms of true benefits to our society on an equitable basis. This will call for a major effort at human resource development.

Problems, Challenges and Opportunities Concerning the Development of Our Nation

There are several areas of deep concern to me. First, there is the continuing growth of population at a rate of over 2% per annum, which will take us to a total population of approximately one billion by the year 2000. There are the basic needs of this population for water, food, shelter, energy, clothing and employment, and the associated aspects of education and health. We will need to produce 230 to 260 million tonnes of foodgrains to meet the needs of a population of one billion by the year 2000; and this will have to be grown on the net sown area currently in use. There is little scope for growing more food through increase in area under cultivation. We, therefore, have to increase productivity very significantly. Apart from foodgrains, we will need to meet the other needs, of protein through fish, meat, poultry, and pulses, as also of edible oils, vegetables, fruits, etc. All of this will have to be done in the context of the energy scarce economy of the future. We have seen the problems of acute scarcity of water for drinking and for agriculture in the past two years. Drought is not an exception but a known recurrent phenomenon and we will have to learn to live wit it. Apart from food security, w will need to ensure water securit We will have to significantl increase the energy availability pe capita. Non-renewable fossil fuel such as coal and oil will becom scarce. Major efforts are calle for in the area of renewabl decentralised energies. All of thes will call for the most powerfu tools that science and technolog can provide. This is not just th matter of scientific work in a fev elite institutions. Science anc technology will have to permeat the total fabric of our society. Thi will call for development of humai resources through education, an concomitant nutrition, publi health and, most important, mora leadership. These are the challenge before us. I am confident that, as nation, we have the ability to fac these. One often sees a mood o cynicism and pessimism—this ca only lead to despair and an inabilit to face this situation. What w need is confidence, courage integrity and togetherness.

I would like to briefly refer t the need for education to dea with the problem of value systems not by superimposition of these bu as an intrinsic part of the learnin process. Many elements in ou value systems are at the very bas of our existence as a nation. Thes are principles of secularism democracy, non-violence, nationa integration, tolerance and com passion. It is important that ou education system covers thes aspects of our values, and th cultures and the roots from which they stem.

National development is nc something to be left purely t government. It is the concern o the whole country; the entire com munity of citizens must be involve in its programmes and committe to its tenets. Each one of us must recognise our responsibilities to our less fortunate brothers and sisters. The attack on poverty is not just the responsibility of government; it is the responsibility of each one of us. Whether we will awake this understanding in good enough time to be able to transform India is the question that confronts us.

The University Community

Having spoken thus far about the many issues of the rapidly changing world scenario, in particular the science and technology scene, and the problems and challanges facing us nationally, I would like to address myself briefly to aspects that are of direct concern to those constituting the university system: the teachers and the students. Those who have taken their degrees and are coming out in the real world have many hopes and aspirations; one is young and starry-eyed, and hopefully optimistic of the future that is in store. However, the major concern of each one relates to securing gainful employment; and education is seen as a means to improve the chances of securing such employment. But in real life, we are presently faced with the problem of increasing numbers of educated unemployed. I believe the university and the teachers have a special responsibility in this regard to the students. The situation is different from the ancient days of rishis and ashrams. After training in such places, the students went back to pre-determined vocations; this is no longer the case. One is living in a fast moving competitive world. There has to be a match between the education system and its output on the one hand and employment opportunities on the other. The university and its teaching staff must provide career and vocational guidance to their students, and institutionalise a process of continuing interaction with those who can provide employment. Increasing avenues become available to an individual who has been given a wide base of training, rather than if one is confined to narrow spectrum of knowledge for which he or she has been selected to study in classical curricula. There are many new opportunities in interdisciplinary areas and the universities must create mechanisms to enable students to take up different combinations of subjects and courses. The university system must interact increasingly with those engaged in such endeavours on the national scene.

To the students I would say that they must realise that this country has had a great past. It has had many civilizations and cultures. We should take pride in these roots and have confidence in ourselves. There is often a tendency to only look to the western developed countries and intimate their cultures without truly realising the roots from which they sprang. We should imbibe the discipline, the capabilities for very hard work, the dignity of labour and many other good qualities which also exist there. We must realise that there is no easy way out; success comes to those who preserve, who are committed to hard work and give their best in whatever they take up. John F. Kennedy had once remarked: "Ask not what your country can do for you—ask what you can do for your country".

Srinivasa Ramanujan and C.V. Raman

Over the past year, I have been thinking deeply about two of the greatest men of science that India has producted in recent times: Srinivasa Ramanujan and C.V. Raman. A few months ago on

ASSOCIATION OF INDIAN UNIVERSITIES

CORRESPONDENCE COURSE IN EVALUATION METHODOLOGY & EXAMINATIONS

Applications are invited from college/university teachers for admission to Correspondence Courses in Evaluation Methodology and Examinations at Basic Level, Intermediate Level and Advanced Level/Special Professional Course. The duration of each of the three courses is six months. A personal 'Contact Programme' for three days is planned for each of the three courses. Universities/Institutions sponsoring candidates can meet the registration/course fees from out of unassigned grants by UGC.

Request for prospectus and application form accompanied by a crossed Indian Postal Order for Rs. 10/- drawn in favour of the Secretary, Association of Indian Universities and a self addressed stamped envelope (Rs. 2/-) should reach the Director (Research), Association of Indian Universities, AIU House, 16 Kotla Marg, New Delhi 110002. Last date for receipt of applications is **15th September** for non-sponsored and **26th September, 1988** for sponsored candidates.

22nd December, 1987, we celebrated 100 years since the birth of that natural born genius of mathematics, Srinivasa Ramanujan. Later this year in November, we will be celebrating 100 years since the birth of that other genius of Indian Science, C.V. Raman.

What is it that we can learn when we think about these landmark events. In Srinivasa Ramanujan we saw the flowering of a self-inspired and self-taught genius—and who was so deeply motivated from within that in spite of grinding poverty and hardships established himself in the ranks of the greatest mathematicians the world has seen; of such stuff is science truly made. One cannot hope to see such genius quite often. Individuals like Galileo, Newton, Einstein or Ramanujan are seen in time intervals of the order of centuries. But at levels somewhat below these towering peaks there must be many of outstanding merit, particularly in the large population such as ours. There is a responsibility that each one of us carries, to ensure that such genius is recognised, nurtured, and provided with challenges and opportunities to fructify. They may be much greater than any of us, and the least we can do is to give them support and encouragement to flower; rather than a spirit of jealousy or envy. This can come about only through significantly increased programmes for human resource development, by major expansions of our educational activities to cover the bulk of our population, and by special efforts to look out for those who are naturally gifted.

As we celebrate the centenary of Srinivasa Ramanujan, it is an occasion for us for introspection. We have through the centuries produced great men of mathematics like Aryabhata, Bhaskara I & II, Varahamihira, Brahmagupta and many others. There are many in the world who talk about an Indian affinity for mathematics. Studies and research in this field do not cost much, as they involve no large capital items; and yet it is queen of all sciences, the underpinning element for the development of all science and technology. As we engage in this introspection, it is clear that we should find ways and means to recreate the elan for improved growth of mathematics in this country.

Again as we look back on the life and work of that other genius C.V. Raman, there are many lessons that we can learn. We have had, of course, many examples in public life in India of those who left the administration and other professions to join the struggle for freedom. C.V. Raman was, however, one who left a secure job future in financial administration, being a member of the Indian Finance Department, to take to science on a full time basis. He did so at the invitation of that great educationist Sir Ashutosh Mukherjee, who recognised the genius of Raman and offered him the newly created Palit Professorship of Calcutta University. Sir Ashutosh then remarked, "I should fail in my duty if I were to restrain myself in my expression of the genuine admiration I feel for the courage and spirit of self sacrifice with which Mr. Raman has decided to exchange a lucrative official appointment with attractive prospects, for a University professorship, which I regret to say, does not carry even liberal emoluments. This one instance encourages me to entertain the hope that there will be lack of Seekers after Truth in the Temple of Knowledge which it is our ambition to erect". This commitment and dedication to science is something that I would like all of you to remember.

Earlier, after his B.A. degree, C.V. Raman had plans to go abroad as suggested by his teachers, but on being examined medically, he was told that his health may not stand the cold and damp climate of England. He later remarked that he was deeply grateful to the British Civil Surgeon whose advice resulted in his staying back in India to develop his own natural genius.

C.V. Raman, I am told, was very fond of a story attributed to the great Lord Rutherford who, when asked by someone, 'Lord Rutherford, you always seem to be riding the crest of a wave", replied, "Damn it, I created the wave, didn't I"; Raman felt that that is how it should be—we should create the waves and ride on them and not be also-rans, following the trends, fashions and leads set by others.

Ramanujan and Raman stood for excellence of the highest order. They truly worked at the frontiers of science. And their lives and their work should inspire us to attempt to do likewise. This is a most appropriate occasion in an educational institution and temple of learning, in the year of their birth centenary for all of us to pay tribute to these great sons of India and the inspired message they have left behind for us. ☐

Super Computer for IIT Kanpur

The ETA 10 Computer system is being installed soon at the Indian Institute of Technology, Kanpur. ETA 10 has the ability to solve very large problems because of its high-speed Scalar and Vector processors, large memories, broad band-widths and extensive input and output capabilities. It can be accessed directly by terminals, micro-computers, workstations and mainframes. Up to 4000 to 5000 workstations can be connected to ETA 10 G system.

The ETA 10 P ordered by IIT, Kanpur has a single processor with a 24 nano second clock and 32 Mb of CPU memory. The configuration includes a service unit with a service processor, an operator console, 64 Mb of shared memory and an input/output unit. High-speed peripherals are also included.

IIT, Kanpur will be utilising this system to cater to both numeric processing loads and interactive loads. Application packages that will run on the system include packages for Engineering disciplines, Physics and Chemistry. The application areas include Computer Aided Engineering (CAE), Robotics, Water Resources Engineering, Transportation Engineering, Finite Element Analysis and Structural Engineering, Large scale Simulation and Optimization, VLSI and Electronic Design, Monsoon Physics, Condensed Matter physics, Quantum and Molecular Chemistry, Metal Alloys Analysis, Expert Systems and Artificial Intelligence.

The system has the capability of both batch and interactive modes of operations. It is the first super to have a fully functional native Unix implementation.

User Instruction Programmes

The National Academy of Agricultural Research Management Hyderabad, proposes to organise a workshop on "User Instruction Programmes and Instructional Systems in Agricultural University and Research Institute Libraries" on September 20-24, 1988. The objective of the workshop is to develop a model curriculum for library user instruction programmes in Indian Agricultural Universities (including the deemed universities) and evolve an effective evaluation pattern.

The topics proposed to be discussed at the workshop are: Planning and evaluation of user instruction programmes; Teaching methods and developing of instructional material, Designing and sequencing of instructions in library user education programmes, Learning principles, instructional types; Component of—Study skills, Learning skills, Bibliographic skills, Communication skills, Information storage skills in library users programmes; Informational Graphics: A visual approach to user education in Agricultural Libraries; Planning and organising of Training Programmes, Seminars, Conferences, Poster Sessions and Exhibitions, Library Publicity and Promotion; Information technologies and CDROM in Agricultural libraries; Organisational and interpersonal Communications; Learning/Training kits and production of tape-slide Story in user programmes; and Instructional strategies and production of instructional aids.

The programme will also include group discussions; invited lectures and field visits; followed by tutorials, which will provide an opportunity to update the knowledge and the use of modern teaching techniques in the user programmes.

Summer Undergraduate Research Fellowship

Thapar Institute of Engineering and Technology (TIET), Patiala offers Summer Undergraduate Research Fellowship (SURF) to encourage Research and Development activities in the Institute. Students of Third-year in any branch of Engineering are eligible for this fellowship. The programme spans over a period of 6 to 8 weeks during summer vacations. Projects involving high technology and Research are pursued by students under faculty guidance.

This year over ten students have undertaken various projects. These include : (i) Dynamic Behaviour of Concrete; (ii) A non-destructive Brinell Hardness Test for Reinforced Concrete; (iii) Computer Aided Design of Overhead Tanks; and (iv) Effect of Repeated Heating on the Properties of Bitumen.

In the Electrical Department, three students developed a Microprocessor Based Control of a Biomass Gasifier.

With a view to encourage integration, the issue of computer resources with learning process, the Institute granted a fellowship to three students of Third-year Mechanical for their project on "Computer Simulation of Heat Transfer in Internal Combustion Engines".

The projects undertaken by the students during previous years were asunder : Computer analysis and Design of Flat-stab/Floor system for all buildings; Design of Robotic Work Cell; and Effect of Steel Fibres on Fracture Toughness of Cement Concrete Infiltrated with Sulpher.

Why Ganga Water Does Not Stink ?

Under the Coordinated study of Ganga ecosystem, the scientists of Faculty of Basic Sciences and Humanities, Rajendra Agricultural University, took up a preliminary study on Bacteriophages i.e. these viruses which specifically attack and kill bacteria The phages, as they are commonly known, are very specific and selective for their hosts. This laboratory initially took up work on phages specific to E. coli (Wild type). The phages were found to be present in all samples analysed alongwith host cells. In one case where the water was collected from 100 m towards midstream of the river the phages were present but host cells were not observed indicating that the phages could also remain viable in extra cellular phase of their life cycle but how long is not known.

From the study it is revealed that phages may be one probable reason as to why the water remains unspoiled and does not stink even after years of storage. Similar to coliphages there may be other phages also present. A more detailed study is underway, because mere presence of phages in Ganga water for its long shelf life is an insufficient answer to establish the fact.

Training Course on Drip Irrigation

The Mahatama Phule Agricultural University organised a special training course on 'drip irrigation : its design, operation and maintenance' for the Agricultural Engineers of Maharashtra Agro-Industrial Development Corporation (MAIDC), Bombay. The course content included teaching of various aspects of drip irrigation dealing with engineering, agronomy, soils and society; and field visits and exercises.

Delhi Varsity Choir at Maitree Yaatra

The Union Minister for Sports, Youth Affairs, Women & Child Welfare Smt. Margarate Alva flagged off the second phase of the Maitree Yaatra, organized by the Sea Explorers' Institute, Calcutta and the Indian Navy to commemorate the 41st year of Independence. The journey will cover 2,200 kms in 42 days from Okhala Barrage to the Bay of Bengal.

On this occasion, Delhi University Choir group presented a lively song.

The song especially composed on the theme 'Maitree' by Dr. Krishan Lal of Sanskrit Department. spoke of true friendship which arises from the heart and takes into its embrace each and every one irrespective of caste or creed.

Central Assistance for Anna University

The Department of Electronics, Government of India, have identified Anna University as one of the Training Centres for running the P.G. Programme (M.E. Computer Science and Engineering) under Cross Migration Scheme from August 1988. The intake for the course is 10 comprising sponsored and non-sponsored candidates. The Scheme is initially implemented for a period of three and half years. The Department has provided a sum of Rs. 12.20 lacs to cover the recurring and non-recurring expenditure for running this course.

The University Grants Commission (UGC) have sanctioned a sum of Rs. 54.60 lakhs to the Centre for Water Resources of Anna University for a period of 5 years for strengthening of research facilities in the area of Ground Water Resources and Water Resources Management.

Diploma in Handloom Technology Recognised

The Union Government is reported to have recognised the three-year diploma course in handloom technology awarded by the Indian Institutes of Handloom Technology at Salem, Varanasi and Guwahati with immediate effect. The recognition, on the recommendation of the Chairman, Board of Assessment for Educational Qualifications, would enable the diploma holders to secure employment in the Central Government.

ISM Computer Centre

A new Prime 2450 System is being added at the Indian School of Mines (ISM) Computer Centre. With a 4 Megabyte memory and interacting graphic terminals and quite a few other sophisticated hardware components, this will be major facility in computing capability. The system will be networked with IDM-S3250 System. This will upgrade the capacity of the computer centre which will now be manned for 2 shifts operation for the benefit of students and faculty members of the School.

New Master Degree Courses at Anna Varsity

The Anna University, in collaboration with the Institute of Mathematical Science, Madras, proposes to start a new Master's degree programme M.Sc. (by research) in the areas of Mathematics, Theoretical Physics, and Theoretical Computer Science with an intake of 10 from the current academic session.

The University also proposes to start a new M.Phil. programme in Environmental Science under the Faculty of Science and Humanities with an intake of 6 from the current year.

B.Ed. by Correspondence

The Punjabi University, Patiala has decided to start the B.Ed. Course and a Diploma Course in Divinity through correspondence from the current academic session.

News from Agril. Varsities

National Symposium on Plant Diseases

Dr. Sukhdev Singh, Vice-Chancellor, Punjab Agricultural University (PAU) said that plant disease epidemics had not only resulted in large scale foodgrain losses, but had world-wide economic and political repercussions. Dr. Singh was inaugurating a two-day National Symposium on Recent Advances in Epidemiology and Management of Plant Diseases. He observed that effective control measures against plant diseases and pests have more significance in this part of the country where intensive cropping was practised and once a disease breaks out, it would take an epidemic form resulting in great losses. He said that major obstacles in increasing foodgrain production were plant diseases and pests and urged plant pathologists to evolve effective control measures against diseases and pests.

Dr. K.S. Nandpuri, Director of Research of the PAU, who presided, said that disease and pest control management had more importance in vegetables and fruits as they were taken raw. He stressed integrated pest and disease control programmes which could effectively check the spread of diseases and pests. Dr. Nandpuri cautioned that the insecticides should be used with care as they were injurious for human beings.

Sponsored by the Indian Council of Agricultural Research (ICAR), the symposium was attended by more than 100 scientists from all over the country.

Mobile Biogas Plant

The Department of Microbiology, Faculty of Basic Sciences and Humanities, Rajendra Agricultural University, has developed a mobile biogas plant with a feed capacity of only 10 cft. and it can hold 15 cft gas (without pressure). The plant is made up of GI sheet. It can be used for gas production from plant wastes (low lignin) from kitchen gardens as also peelings of vegetables. Once filled it starts gas production after 25-30 days initially but thereafter it becomes a continuous process. In the initial stage about one Kg of cattle dung has to be added as the source of methane producing bacteria. Unlike fixed biogas plants it can work with equal efficiency during winters also when the temperatures are too low for the methane forming bacteria to grow and produce gas, as it can be moved on wheels and placed in sun so that the temperature inside may reach a level of about 30°C.

The mobile biogas plants will, it is hoped, make the facility of biogas, popularly known as Gobar gas, available to people in urban areas also.

News from UGC

INSAT-1B Programme of UGC

Between 1st September to 10th Sept., 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

1.9.88

"Computer Memory—I"
"Marine Micro Zoo Plankton"

2.9.88

"Modelling Drug Therapy"
"Timekeepers of Centuries—I"
"Weather"

3.9.88

"Design and Environment—V Our Visual Environment"
"Historical Linguistics—Language Families in India"
"Rhythm Puppet Making"

4.9.88

No Telecast

5.9.88

"Enzyme Structure by Spectroscopy"
"Time Management : The Edge of Success"
"Raw Materials—Vegetable Oil"

6.9.88

"Teleteach—XIII"
"Discovery of Vitamins"
"Prevention of Goitre"

7.9.88

"Plants : Problems with Water"
"Transistor as an Amplifier"
"Between Yesterday & Tomorrow"

8.9.88

"Memories—II"
"Crocodiles : The Living Dinosaurs"
"A Vision of Tomorrow"

9.9.88

"Modelling Surveys"
"Timekeepers of Centuries—II"
"Animal in Focus—Saige Antelope—I"

10.9.88

"Design & Environment—VI Forms to Aid Human Posture"
"Dravidian Population Overseas—The Process of Language Attrition"

Sports News

Delhi University Bags Dr. Gupta Trophy

Delhi university has won the prestigious Dr. B.L. Gupta Inter-University General Championship Trophy for the year 1987-88. The Trophy, instituted by AIU in the year 1982-83 in memory of Dr. B.L. Gupta, is in recognition of his contribution to the promotion of sports in the university sector as the Director and Head of the Department of Physical Education, Panjab University, Chandigarh. The trophy is a token of overall supremacy of a university in the Inter-University Tournaments.

The trophy was awarded to Delhi University by Prof. S.K. Agrawala, Secretary of the Association of Indian Universities at the AIU House, New Delhi on August 16, 1988.

Since the inception of this trophy, Guru Nanak Dev University won it for 4 years in succession from 1983-84 to 1986-87. Kerala University were the first winners in 1982-83.

News from Abroad

Revamping Australian Higher Education

Mr. John Dawkins, Australia's Minister for Employment, Education and Training recently released a white paper on higher education which, inter-alia, promises the biggest shake-up of the higher education system ever proposed. It will lead to fewer and larger institutions, a new unified national system, the abolition of the binary system, a huge increase in student enrolments and greater access to those groups traditionally denied a place in higher education.

Mr. Dawkins said the paper proposed the most far-reaching reform of the higher education system to be undertaken. It would lead to a distinctive Australian system that would rank with any in the world.

The policy establishes for the first time a system of direct negotiations between institutions and the federal education ministry over funding for teaching and research. This is, in fact, the key to the government's plans for a radical overhaul of the way universities and colleges are run and the manner in which they are funded. The policy ends what had become an increasingly artificial distinction between universities and colleges of Advanced Education by allowing the colleges to compete with the universities for research funds.

From next year, institutions will receive one operating grant, instead of the several they get at present, for equipment, minor works, recurrent costs and special research. Most of the grant will be determined by a document called the institution's "education profile". Prepared by the institution itself, then negotiated with the government, the profile will define the institution's role and the basis on which it will receive government grants.

The White Paper says the profiles will cover six areas :

(i) The institution's broad mission and objectives.
(ii) Details of its teaching activities for the 1989-91 funding triennium, including student numbers, new students and graduating students.
(iii) A research activities outline and research management plans.
(iv) A statement of intent on measures to achieve national objectives, including equity

(v) Deails of other significant activities.

(vi) Approved funding levels.

Apart from the money allocated on the basis of these profiles, the government will set aside 1 per cent of total operating grants in a reserve or "reward" fund for institutions that best respond to identified areas of national priority, such as improving equity.

The White Paper proposes an expansion in graduate numbers from the 88,000 or so at present to 125,000 by the year 2000. Extra student places in institutions should be allocated to such areas as computer science, information technology, business administration, economics, accountancy and Asian studies. The government will also tie general funding directly to each institution's success in enrolling disadvantaged students and will give extra grants to specific equity programmes.

At least a third of the nation's 65 tertiary institutions will be forced to amalgamate with others to meet the government's minimum enrolment figure of 2,000 students Optimum enrolments will be set between 5.000 and 8,000 students. But Mr Dawkins said there would be no forced mergers. He said smaller institutions would have the option of pushing for more students to raise them above the 2,000 threshold, consolidating with other institutions, or seeking entry to the Tertiary and Further Education system which is funded by state governments.

Institutions with between 2,000 and 5,000 full-time students and little prospect of growth would be encouraged to consider their future as independent institutions. They would not be able to support both teaching and research in a wide range of areas, the White Paper states.

Blueprint for Over Regulation

However, reacting to the government's proposal the Vice-Chancellor of Melbourne University, Professor David Penington, warned that centralization of funding could be disastrous for research. He said no central authority should be given the degree of authority proposed.

Professor Brian Wilson, Head of Queensland University and Chairman of the Australian Vice-Chancellors' Committee, a body which had previously endorsed the government's push for fewer and bigger institutions, said the promise of deregulation had not been delivered. He described the White Paper as a blueprint for over regulation.

He said that the paper in fact represented a major intrusion into the universities' affairs and the government's plans for greater centralization included: (i) Barring institutions from joining the unified national system unless they met demands on internal management; (ii) Using education profiles to make funding decisions rather than allowing people on the ground to make those decisions; and (iii) Interference in the operations of universities by federal government-sponsored reviews of management.

Attention Scientists and Technologists

Indian Expertise in Science and Technology

The Research Cell in Economics of Education of the Association of Indian Universities is conducting a survey of Indian expertise in science and technology in the University sector. It is proposed to prepare a comprehensive database of the skills, knowledge and facilities of the university level institutions as well as a directory of experts in various disciplines of science and technology. The survey is also intended to catalogue the expertise and current research work of Indian scientists and technologists in various fields of science and technology, and will be used as an input for the compilation of a comprehensive database on the scientific and technical manpower in the country. The database will provide a ready reference to the industry, commerce and allied sectors of Indian economy for identifying experts in the relevant fields.

The scientists and technologists engaged in teaching and research in the universities and university level research institutions in India **at the lecturer or equivalent and above levels only** are requested to fill-up the prescribed form, which can be had from the undersigned. The completed form should be returned latest by **September 30, 1988**.

The responses from the academic and research staff are solicited, and their cooperation would be highly appreciated in our venture to build up a comprehensive database.

For the prescribed form, kindly write to:

M M Ansari
Joint Director
Research Cell, Economics of Education
Association of Indian Universities
AIU House, 16 Kotla Marg
NEW DELHI 110 002

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A List of Research Scholars Registered for Doctoral Degrees of Indian Universities

PHYSICAL SCIENCES

Statistics

1. Thomas, P. Yageen. *Estimation of the parameters of location scale family of distribution by order statistics.* Kerala. Dr. Jacob Sundara Raja, Reader, Department of Statistics, University of Kerala, Kariavattom.

Chemistry

1. Birdi, Dilip. *Coordination chemistry of sulfur monoxide, thiazate, disulphido—thionitrate and carbonyl sulphide.* Devi Ahilya. Dr. K.K. Pandey, Reader, School of Chemistry, Vigyan Bhawan, Khandwa Road, Indore.

2. Biswas S.S. *Studies in chromatography.* Shivaji. Dr. N.R. Ayyangar, Head, Division of Organic Chemistry II, National Chemical Laboratory, Pune.

3. Hote, Bhabani Prasad. *Electro-chemical and spectroelectro-chemical studies.* Delhi. Dr. (Mrs) Y. Monika.

4. Wadkar, J.G. *Synthesis of biologically active compounds : Synthesis of benziosxazole derivatives.* Shivaji. Dr. S.N. Kulkarni, Scientist, Organic II Division, National Chemical Laboratory, Pune.

Earth Sciences

1. Ajayakumar, V. *Variation of depositional and diagenetic fabrics of the Jurassic carbonate lithofacies (Jaisalmer limestone), Jaisalmer basin, India.* Kerala. Dr. K.P. Thrivikramji, Reader, Department of Geology, University of Kerala, Kariavattom.

2. Banerjee, Rajeeb. *Structural geology.* Delhi. Prof. P.S. Saklani, Department of Geology, University of Delhi, Delhi.

3. Mahapatra, Ajit Kumar. *Micropaleontology.* Delhi. Dr. V. Sharma, Department of Geology, University of Delhi, Delhi.

4. Nasseri-Behrestaghi, Mohammad Hossein. *Structural geology.* Delhi. Prof. P S. Saklani, Department of Geology, University of Delhi, Delhi.

5. Shreshtha, Jagadiswar Nath. *Sedimentology stratigraphy.* Delhi. Dr. P.K. Verma, Department of Geology, University of Delhi, Delhi.

Engineering & Technology

1. Gupta, Alok Kumar. *Pore formation in metals and alloys.* BHU. Prof. S.L. Malhotra, Department of Metallurgical Engineering, Banaras Hindu University, Varanasi.

BIOLOGICAL SCIENCES

Microbiology

1. Sharma, Nivedita. *Role of cellulolytic microbes in the degradation of physico-chemically treated forest biomass.* HP. Dr. T.C. Bhalla, Department of Biosciences, Himachal Pradesh University, Shimla.

Botany

1. Kalsi, Gurpreet. *Studies of plant lectins and their role in microbe-plant interactions.* Delhi. Dr. C.R. Babu, Department of Botany, University of Delhi, Delhi and Dr. R.H. Das, Council for Scientific and Industrial Research, New Delhi.

2. Malik, Pushpa. *Aerobiological and biochemical studies on some pollen of allergenic significance.* Delhi. Dr. C.R. Babu, Department of Botany, University of Delhi, Delhi, Dr. A.B. Singh, Council for Scientific and Industrial Research, New Delhi and Dr. S.V. Gangal, Council for Scientific and Industrial Research, New Delhi.

3. Om Prakash. *Specific gravity and tracheid length variations in West Himalayan spruce, Picea smithiana (Wall) Beiss.* HP. Dr. M.K. Seth, Department of Biosciences, Himachal Pradesh University, Shimla.

4. Shad, Onkar Singh. *Biological studies on Morcella species (Morels) of Himachal Himalayas.* HP. Dr. T.N. Lakhanpal, Department of Biosciences, Himachal Pradesh University, Shimla.

5. Sharma, Bindu. *Morphology, physico-chemical properties and cultivation aspects of 'Cauliflower' mushroom, Sparassis Spp.* HP. Dr. T.N. Lakhanpal, Department of Biosciences, Himachal Pradesh University, Shimla.

6. Vaneeta. *Seed physiology and biochemistry mechanism of seed deterioration during storage.* Delhi. Prof. R.N. Chopra, Department of Botany, University of Delhi, Delhi and Dr. P.K. Agarwal, Indian Agricultural Research Institute, New Delhi.

Zoology

1. Hari Prakash. *Biological control in insect pest management.* Delhi. Prof. S.S. Sehgal, Department of Zoology, University of Delhi, Delhi.

2. Kamra, Komal. *Cortical morphogenesis in hypotrichous ciliates.* Delhi. Dr. G.R. Sapra, Department of Zoology, University of Delhi, Delhi.

THESES OF THE MONTH

A List of Doctoral Theses accepted by Indian Universities.

PHYSICAL SCIENCES

Mathematics

1. Antherjanam, N. Nirmala. *Studies on korteweg-de vries equations.* CUST. Dr. M. Jathavedan, Lecturer, Department of Mathematics and Statistics, Cochin University of Science and Technology, Cochin.

2. Arjan Dev. *On some flow-shop scheduling problems.* Meerut. Dr. P.L. Maggu, Department of Mathematics, Institute of Management Technology, Ghaziabad.

3. Das, Braja Kishore. *A brief study of roots of a class of random polynomial.* Sambalpur. Dr. N.N. Nayak, Reader, Department of Mathematics, Orissa University of Agriculture and Technology, Bhubaneswar.

4. Paul, Akhil Chandra. *Distributional boundary values of functions Holomorphic in tubular radial domains.* BHU. Dr. R.S. Pathak, Reader, Department of Mathematics, Banaras Hindu University, Varanasi.

5, Shyam Narain. *Certain contributions to the study of summability of infinite series.* BHU. Dr. L.M. Tripathi, Reader, Department of Mathematics, Banaras Hindu University, Varanasi.

6. Singh, Brij Bhan. *On laminar boundary layers of incompressible flows.* BHU. Prof. K. Lal.

7. Singh, Lal Pratap. *Some aspects of nonlinear waves in radiating and electrically conducting glass.* BHU. Dr. V.D. Sharma.

Statistics

1. Gupta, Subhash Chand. *Some contributions to branching and allied processes.* HAU.

Physics

1. Bajpai, Rakesh. *Study of some mechanical properties of polycarbonates.* Durgawati. Dr. S.C. Datta, Prof. and Head, and Dr. J.M. Koller, Lecturer, Department of Physics, Rani Durgawati Vishwavidyalaya, Jabalpur.

2. Das, Salil Kumar. *Electrostatic and electromagnetic instabilities in plasmas.* IIT, Delhi. Prof. M.S. Sodha and Prof. D.P. Tewari, Department of Physics, Indian Institute of Technology, New Delhi.

3. Gera, Vivan Bala. *Electronic structure of III-V ternary and quaternary alloys.* IIT, Delhi. Prof. S.C. Abbi and Prof. K.P. Jain, Department of Physics, Indian Institute of Technology, New Delhi.

4. Manickkavachagam, R. *Studies in crystal structure analysis : Crystal structures of metallic sulphamates.* Madurai.

5. Mehta, Devinder. *Nuclear spectroscopic studies in certain nuclei.* Panjab.

6. Mukul Kumar. *On heating of the solar corona.* Meerut. Dr. Udit Narayan, Department of Physics, Meerut College, Meerut.

7. Mulchandani, Anchal Mahesh. *Some aspects of colour centres and related phenomena in microcrystalline powders of alkali halides.* Nagpur. Dr. B.T. Deshmukh, Department of Physics, Nagpur University, Nagpur.

8. Nageswara Rao, Manne. *Some studies on equatorial spread-F using HF and VHF techniques.* Andhra.

9. Naik, Satchidananda. *Relativistic effects on hadronic structure.* Utkal.

10. Ram, Shakal Narain. *Hadronic properties of bottom particles, Gluonia and glue-balls.* BHU. Dr. C.P. Singh, Reader, Department of Physics, Banaras Hindu University, Varanasi.

11. Reghunath, A.T. *Studies on optical attenuation in oza water using dye laser and laser propagation in a turbulent medium.* CUST. Dr. V.P.N. Nampoori, Reader, Department of Physics, Cochin University of Science and Technology, Cochin.

12. Sarkar, Prasanta Kumar. *Collision frequency in F-region of the ionosphere.* Calcutta.

13. Sharma, Ashok Kumar. *Investigations on frequency stabilization of quarts crystals and associated instrumentation.* Meerut. Dr. A.S. Yadav, Department of Physics, MMH College, Ghaziabad and Dr. Ram Prashad Emeritus Scientist, National Physical Laboratory, New Delhi.

14. Singh, Kangujam Yugindro. *Some aspects of hadronemulsion interactions at accelerator and cosmic ray energies.* Delhi.

15. Subrahmanyeswara Rao, Siram. *Experimental investigations in the decay of 124 Sb, 115m Cd, 110m+9Ag, and 153 Gd. nuclei using high resolution detectors.* Andhra.

16. Tiwari, Ram Prit. *Spectral studies of some substituted benzenes : Sys. trichloro, tribromo and trifluorobenzenes o-difluorobenzene, o-bromofluoro-benzene toluene h_8, toluene d_8, benzene d_6.* BHU. Prof. K.N. Upadhyaya, Reader, Department of Physics, Banaras Hindu University, Varanasi.

17. Tyagi, Udai Prakash, *Polytypism in melt and solution grown doped single crystals of cadmium iodide.* Delhi.

18. Venkoji Pathangi. *Vibrational and electronic spectra of certain substituted benzaldehydes.* Andhra.

19. Verma, Rajendra Prasad. *Annealing and radiation damage studies in some metals and alloys.* Devi Ahilya.

Chemistry

1. Adeyemi, Olufemi Olalekan. *Studies on the effect of some organic heterocycles on the acid corrosion of commercial copper.* Delhi.

2. Agrawal, Om Prakash. *Some Physico-chemical studies on calcium, barium, copper and zinc containing mixed hydroxylapatites.* Sambalpur. Dr. P.N. Patel, Lecturer, Department of Chemistry, G.M. College, Sambalpur.

3. Bhat, J. Ishwara. *Kinetic and mechanistic investigations with positive halogens in the liquid phase.* Mangalore. Dr. B. Thimme Gowda, Reader, Department of Chemistry, Mangalore University, Mangalore.

4. Dany, Chandra Mohan. *Studies on some copper and nickel complexes.* Sambalpur. Dr. Asoke Kumar Das, Principal, Bonaigarh College, Bonaigarh, Distt Sundargarh.

5. Das, Alak Kumar. *Charge transfer interaction in crystalline molecular complexes.* Calcutta.

6. Das, Asim Kumar. *Kinetics and mechanism of ligand substitution reactions at copper II, nickel II and palladium II centres.* Calcutta.

7. Das Gupta, Debasis. *Studies on the transport properties of tetraalkylammonium salts in 2-methoxy ethanol, 1, 2—dimethoxy ethane and their aqueous binary mixtures,* NBU.

8. Dhar, Hemendra Chandra. *Reaction mechanism of substitution reactions in diamino bis biguanide and diaguo bis ethylene-diamine cobalt (III) complexes.* Burdwan. Prof. Sushil Kr Siddhanta, Prof. (Retd.), Department of Chemistry, University of Burdwan, Burdwan.

9. Fakhir, Thawra M. *Isolation and structural studies of senecio, lupinus and norsecurinine alkaloids.* Delhi.

10. Gour, Ramdhan Shankarlal. *Physico-kinetic studies of some drugs in relation to their biological activity.* Devi Ahilya.

11. Guha, Jayasri. *Studies in the synthesis of polycyclic compounds by rearrangement of spinanes and acylation by lactines.* Calcutta.

12. Gupta, Vibha. *Studies on complexing behaviour of oxygen, nitrogen and sulphur donor molecules with heavy metal ions.* Meerut. Dr. S.K. Sangal, Department of Chemistry, Meerut College, Meerut.

13. Islam, Nashreen S. *Studies on peroxo and heteroligand peroxo complexes of vanadium (V) and fluoro and mixed ligand-fluoro complexes of iron (III).* NEHU. Dr. M.K. Choudhury, Reader, Department of Chemistry, North Eastern Hill University, Shillong.

14. Jain, Archana. *Studies in some CH-active heterocycles.* BHU. Dr A.K. Mukherjee, Reader, Department of Chemistry, Banaras Hindu University, Varanasi.

15. Jain, Raj Kumari. *Ultrasonic and thermo-dynamic studies of liquids and solutions.* Meerut. Dr. M.C. Jain, Reader and Head, Department of Chemistry, S.D. College, Muzaffarnagar and Dr. J.D. Pandey, Reader, Department of Chemistry, Allahabad University, Allahabad.

16. Khan, Iftikhar Ali. *IPSO-Nitration in some alkoxy benzenes.* Meerut. Dr. A.K. Manglik, Lecturer, Department of Chemistry, Meerut College, Meerut.

17. Koteswar Rao, Y. *Synthetic studies towards (+) — laurenene and some reactions of geminal disulfones.* Hyderabad. Dr. M. Nagarajan.

18. Majee, Swapan. *Studies on some chelating ion-exchangers containing 1 : 3 diketogrouping.* Burdwan. Prof. Jyotirmoy Das, Department of Chemistry, University of Burdwan, Burdwan.

19. Malathi, N. *Synthesis of the pheromone of the fall armyworm moth z-9-tetradecenyl acetate and some long chain amines, their quaternary salts from aleuritic acid.* Delhi.

20. Mukhopadhyay, Sankardeb. *Synthetic studies in cancer chemotherapy : Synthetic studies with 4 [N, N-Bis- (2-hydroxyethyl) amino] benzaldehyde.* Calcutta.

21. Nandi, Gopa. *Studies on natural products and related six membered heterocycles.* Calcutta.

22. Narayana, C. *Synthetic and mechanistic studies on the hydroboration of olefins with various borane Lewis base complexes.* Hyderabad. Dr. M. Pariasamy.

23. Narender, G. *Study of phenomena of interaction among resin, solvent and pigments and the properties of their dispersions and coatings.* Osmania.

24. Narindra Kumar. *Physico-chemical and synthetic studies of some substituted thiocarbamides and their metal complexes.* Meerut. Dr. V.P. Kudesia, Department of Chemistry, DN College, Meerut and Dr. A.D. Taneja, Department of Chemistry and Biochemistry, Haryana Agricultural University, Hisar.

25. Neelavani, R. *Physico-chemical studies of polymers poly, 2-methoxy cynurate of bisphenol A and C and solution thermal, mechanical and morphological properties.* Patel. Dr. K.C. Patel, Vice-Chancellor, Sardar Patel University, Vallabh Vidyanagar.

26. Ray, Manoj Kumar. *Chemical studies of some medicinal plants with special reference to asteraceae.* Calcutta.

27. Satyanarayana Murty, Rajanala Veera Venkata. *Azine and oxazine dyes as indicators in pharmaceutical analysis.* Andhra.

28. Sengupta, Biswajit. *Studies on the separation and determination of some hazardous substances related to river water.* Burdwan. Prof. Jyotirmoy Das, Department of Chemistry, University of Burdwan, Burdwan.

29. Sharma, Mayank. *Polarographic and other physico-chemical studies on substituted thioureas.* Meerut. Dr. J.S. Tyagi, Department of Chemistry, Meerut College, Meerut.

30. Singh, Ashok Kumar. *Study in the variable valency of metal on catalysed oxidation of some organic compounds.* Bundelkhand. Dr. J.P. Chachouria, Lecturer, Department of Chemistry, D.B. College, Urrai.

31. Srinivas Rao, K. *Angular triguinanes studies in natural product synthesis.* Hyderabad. Prof. G. Mehta, Head, Department of Chemistry, University of Hyderadad, Hyderadad.

32. Tutlani, Des Raj. *Studies on the interaction of biologically active metal ions with some nitrogeneous bases.* Meerut. Dr. S.K. Agarwal, Head, Department of Chemistry, L.R. College, Sahibabad.

33. Tyagi, Youva Raj. *Studies on thymidine kinase.* Meerut. Dr. J.S. Tyagi, Department of Chemistry, Meerut College, Meerut.

34. Vansadia, R.N. *Studies on some compounds of medicinal interest.* Saurashtra. Dr. (Mrs) H.H. Parekh, Reader, Department of Chemistry, Saurashtra University, Rajkot.

Earth Sciences

1. Jain, Atul Kumar. *Climate sensitivity studies with radiative-convective models.* IIT, Delhi. Dr. Murari Lal, Centre for Atmospheric Sciences, Indian Institute of Technology, New Delhi.

2. Sahai, Atul. *A study of structure and tectonics of the area around Nayalgarh, District Pauri Garhwal, U.P.* BHU. Dr. H.B. Srivastava.

3. Sanjeeva Rao, Popuri. *Some agro climatological studies of Prakasam and Nellore Districs, A.P., India.* Andhra.

4. Singh, Yamuna. *Geology and gronnd water resources of the South Western region of Rewa District, Madhya Pradesh, India.* Nagpur. Dr. K. Suryanarayana and Dr. G.G. Deshpande, Department of Geology, Nagpur University, Nagpur.

5. Sobeh, Atta Yousef. *Micropalaeontological investigation of some tertiary rocks of Bikaner, Western Rajasthan, India.* Panjab.

6. Umamaheswara Rao, Jampani. *Mineralogy and geochemistry of basic pyroxene granulites from Visakhapatnam Region, Audhra Pradesh.* Andhra.

Engineering & Technology

1. Chakrabarti, Parthasarathi. *Some theoretical studies on MM-wave generation and optical detection using III-V semiconductors.* BHU. Dr. B.B. Paul, Reader, Department of Electronics Engineering, Banaras Hindu University, Varanasi.

2. Devaswithin, A. *Comminution studies in Ball Mill.* IIT Delhi. Dr. B. Pitchumani, Department of Chemical Engineering, Indian Institute of Technology, New Delhi.

3. Krishnasamy, K.V. *Regional modelling of nonlinear flows in multiliguifer systems,* Anna.

4. Lyall, Mohinder Singh. *Studies in gas-solid systems.* IIT, Delhi.

5. Prem Prakash, V. *Some aspects of piecewise linear resistive networks.* IIT Delhi. Dr. V.C. Prasad, Department of Electrical Engineering, Indian Institute of Technology, New Delhi.

6. Shrivastav, Kailash Nath. *Studies on the nucleate boiling characteristics of binary mixtures.* BHU. Dr. S.N. Gupta, Department of Mechanical Engineering, Banaras Hindu University, Varanasi.

7. Singh, Brajeshwar. *Physico-mechanical characterisation of particle dispersed, fibre reinforced, hybrid composites.* BHU. Dr. R.K. Sinha.

8. Singh, Nagendra Prasad. *On feedback control design of singularly perturbed systems with applications to synchronous machines.* IIT Delhi. Prof. S.I. Ahson and Dr. Y. P. Singh, Department of Electrical Engineering, Indian Institute of Technology, New Delhi.

9. Sinha, Mahesh Prasad. *A study on slow wave propagation through a planar helix.* BHU. Prof. R.K. Jha, Department of Electronics Engineering, Banaras Hindu University, Varanasi.

10. Suhail Ahmad. *Static and dynamic behaviour of marine riser.* IIT Delhi. Dr. T.K. Datta, Department of Civil Engineering, Indian Institute of Technology, New Delhi.

11. Srivastava, Vijay Kumar. *Nondestructive evaluation of composite materials.* BHU. Dr. Ravi Prakash, Reader, Department of Mechanical Engineering, Banaras Hindu University, Varanasi.

12. Tuladar, S.B.S. *Mixed traffic flow characteristics on urban roads.* Bangalore. Dr. C.E.G. Justo, Prof., Department of Civil Engineering, Bangalore University, Bangalore.

13. Vaidya, Narendrakumar Gopalrao. *Studies on cross linked enzymes.* Nagpur. Dr. B.Y. Rao, L.I.T., Nagpur.

National Institute of Educational Planning and Administration

17-B, Sri Aurobindo Marg,
New Delhi—110 016

Applications are invited for the following posts

I. FOR PROJECTS :	Project Fellow	Project Associate Fellow	Project Assistant
School Mapping (upto 30.9.1989)	1	1	1
All India Survey of Educational Administration (upto 30.9.1989)	1	1	1
Development & Efficient Functioning of Colleges (upto 31.7.1989)	1	—	—
International Diploma in Educational Planning and Administration (IDEPA) Programme (Upto 30.6.1989, but likely to continue)	—	1	1

PROJECT FELLOW (3 posts)

(Consolidated salary between Rs. 4700 to 5000 inclusive of House Rent Compensation of Rs. 800 p.m. to be regulated as per rules)

Qualifications

Essential

Should have consistently good academic record with first or high second class (B+) Master's degree in Education, Social Sciences, Sciences or disciplines allied to Educational Planning and Administration of an Indian University **OR** equivalent degree of a foreign university :

Either a doctorate degree of an Indian or foreign University **OR** published research work of a high standard **OR** outstanding academic contribution in the relevant area of the project.

At least 5 years of teaching/conducting and/or guiding research or equivalent administrative/professional experience in relevant areas. Proven merit in writing/editing/documenting professional work.

Desirable

For **School Mapping and Educational Survey**, rich educational background and experience in the area of educational planning and administration and management systems of government, proficiency in quantitative methods and/or regional planning.

For **Development and Efficient Functioning of Colleges**, good knowledge of functioning of collegiate system in India and capability to establish rapport with college and university authorities, teachers and students and the government.

Age : Below 45 years

PROJECT ASSOCIATE FELLOW (3 posts)

(Consolidated Salary between Rs. 2800 to 3100 p.m. inclusive of House Rent Compensation of Rs. 450 p.m. to be regulated as per rules)

Qualifications

Essential

A doctoral degree or equivalent published work with first or high second class Master's degree in Education, Social Sciences, Sciences or disciplines allied to Educational Planning and Administration or an equivalent degree of a foreign university.

Desirsble

For **School Mapping & Educational Survey** 3 years experience in data collection, processing and anaiysis.

Rich educational background and experience in the area of educational planning. administration and management systems in government and proficiency in quantitative methods and/or regional planning.

For **I.D.E.P.A Programme** academic background in educational policy, planning and administration preferably with knowledge of and research experience in comparative education for 3 years.

Capability of drafting programme and research reports.

Age : Below 35 years.

PROJECT ASSISTANTS (3 posts)

(Consolidated salary between Rs. 2200 to 2500/- p.m. inclusive of House Rent Compensation of Rs. 450/- p.m. to be regulated as per rules).

Qualifications
Essential

Minimum Second Class Master's Degree in Education, Social Sciences Sciences or disciplines allied to educational planning and administration.

Desirable

Experience in collection, compilation and analysis of data/material relating to educational planning and administration.

For **School Mapping and Educational Survey,** experience of working on computers will be an additional qualification.

Age : Below 30 years.

II. CADRE POSTS

SENIOR STENOGRAPHER (English) : (1 post)
Rs. 1400-40-1600-50-2300-EB-60-2600.

Qualifications
Essential

A Bachelor's degree with minimum speed of 120 w.p.m. in shorthand and 40 w.p.m. in typewriting.

Desirable

Two years experience as Stenographer in a Government department/organisation of repute.
Age : 18-28 years.

JUNIOR STENOGRAPHER (English) : (2 posts)
Rs. 1200-30-1560-EB-40-2040.
1 — Reserved for SC
1 — Reserved for ST

Qualifications

Higher Secondary or equivalent; minimum speed in English Shorthand 80 w.p.m and in typewriting 40 w.p.m. Preference will be given to persons possessing speed at 100 w.p.m. in Shorthand.

Age : 18-28 years.

LOWER DIVISION CLERK-CUM-TELEPHONE OPERATOR : (1 post)
Rs. 950-20-1150-EB-25-1500 plus Rs. 40/- p.m. special pay during the period of posting as Telephone Operator.

Qualifications
Essential

Higher Secondary or its equivalent; should possess Telephone Operator's certificate from a recognised institution with one year's experience as Telephone Operator.

Desirable

Knowledge of English Typing and fluency in conversation.

Age : 18-28 Years.

Cadre posts also carry the usual allowances as are admissible under the Central Government Rules.

Applications clearly specifying the post and the name of the project in case of project posts, with full bio-data particulars alongwith attested copies of certificates, a recent passport size photograph and a non-refundable crossed postal order of Rs. 8/- (no postal order is required in the case of SC/ST candidates) drawn in favour of Registrar, N.I.E.P.A., 17-B, Sri Aurobindo Marg, New Delhi-110016, should reach the Registrar latest by **20.9.1988. Separate application be made for each post.**

Project posts may involve touring. Qualifications and age are relaxable for otherwise well qualified candidates. Candidates from outside Delhi called for interview will be paid single return train second class fare by shortest route. Candidates already in employment in Government/Semi-Government Departments/Autonomous Bodies should send their applications through proper channel.

Other things being equal, preference will be given to SC/ST candidates.

R.P. Sexana
REGISTRAR

DL1-115

CLASSIFIED ADVERTISEMENTS

DR. YASHWANT SINGH PARMAR UNIVERSITY OF HORTICULTURE AND FORESTRY SOLAN

Advertisement No. 2/88

Applications on the prescribed form are invited for following posts :

I. Posts in the grade of Rs. 1500-2500 (Pre-revised) plus rent free unfurnished accommodation or allowance at the rate of 10% of pay

1. Director of Research
2. Director of Extension Education
3. Students Welfare Officer

Qualifications

Post at Sr. No. 1 : (1) Ph. D. degree or its equivalent in Horticulture/Forestry or in their allied Sciences.

(2) 10 years' teaching/research experience in a relevant field out of which atlest 5 years' experience should be as Professor or equivalent rank.

(3) A significant contribution and accomplishment in the field of teaching/research/extension education as evidenced by publications/articles in a journal of repute.

(4) Ability to organise, supervise and co-ordinate research in the field of Horticulture, Forestry and Allied Sciences.

Post at Sr. No. 2 : (1) Ph. D. degree or its equivalent in Horticulture/Forestry or in their allied Sciences.

(2) 10 years' teaching/research/extension education experience in a relevant field out of which atleast 5 years' experience should be as professor or equivalent rank.

(3) A significant contribution or accomplishment in the field of research/education/extension education as evidenced by publications.

(4) Ability to organise, supervise and co-ordinate extension education activities in the field of Horticulture, Forestry and Allied Sciences.

(5) He should preferably be conversant with the conditions of Horticulture and Silvi-Horticulture practices of Himachal Pradesh.

Post at Sr. No. 3 : (1) Atleast 2nd Class Master's degree in any discipline.

(2) Adequate experience or organising sports games and other students' welfare activities for a period of not less than 10 years.

(3) Must have played at the National level.

II. Librarian in the grade of Rs. 1500-2500 (Pre-revised)

Qualifications

(1) Ph.D. degree in Library Science from recognised University/Institution.

(2) Not less than 10 years' experience of work in a Library of repute and good knowledge of modern library system or five years' or above as Deputy Librarian in a University or an Institution of comparable standard.

Note : Relaxable to 2nd Class Master's degree in Library Science from a recognised University/Institution in case of a candidate having 10 years' experience as Deputy Librarian in a University Library.

III. Posts in the grade of Rs. 1500-2500

1. Professor of Post Harvest Technology—(1)

(2) Professor of Bio-Technology—(1)

(3) Professor of Floriculture and Landscaping—(1)

(4) Professor of Forest Products and Utilization—(1)

Qualifications—General

(1) Ph.D. degree or equivalent in the subject with consistently good academic record.

(2) 10 years' teaching/research/extension education experience in the subject out of which atleast 5 years experience should be as Associate Professor/equivalent.

(3) Significant contribution as evidenced by publications, articles in a journal of repute.

(4) Ability to provide leadership to the department.

Qualifications—Specific

Post at Sr. No. 1 : Ph.D. in Horticulture/Pomology/Food Technology with specialization in Post Harvest Technology, Fruits, Vegetables and Foods.

Post at Sr. No 2 : Ph.D. in Genetic/Cytogenetic/Molecular Biology/Botany with specialization in Cell Biology/Molecular Biology.

Post at Sr. No. 3 : Ph.D. in Floriculture/Landscaping/Horticulture with specialization in Floriculture and/or Landscaping.

Post at Sr. No. 4 : Ph.D. in Forestry with specialization in any of the subjects like Wood Sciences, Timber Utilization, Logging, Wood Processing, Forest Products, Medicinal and Aromatic Plants with consistently good academic record.

IV. Post in the grade of Rs. 1200-1900

1. Associate Professor of Floriculture and Landscaping—(1)

2. Associate Professor of Agril. Economics and Sociology—(1)

3. Associate Professor of Extension Education—(1)

4. Associate Professor of Wild Life—(1)

5. Horticulturist—(1)

6. Scientist of Fruit Breeding—(1)

7. Extension Specialist of Mycology and Plant Pathology—(1)

Qualifications—General

(1) Ph.D. degree or equivalent in the subject with consistently good academic record.

(2) 5 years' teaching/research/ extension education experience in the subject.

(3) Significant contribution as evidenced by publications, articles in a journal of repute.

Qualifications—Specific

Post at Sr. No. 1 : Ph.D. in Floriculture/Landscaping/Horticulture with specialization in Floriculture and/o Landscaping.

Post at Sr. No. 2 : Ph.D. in Agricul-ure Economics and Rural Sociology.

Post at Sr. No. 3 : Ph. D. in Agricul-ure Extension Education.

Post at Sr. No. 4 : Ph. D. in Forestry/Zoology with specialization in wild life.

Post at Sr. No. 5 : Ph. D. in Horticul-ure with specialization in Pomology/Fruit Culture/Orchard Management.

Post at Sr. No. 6 : Ph. D. in Horticulture/Pomology with specialization in Fruit Breeding.

Post at Sr. No. 7: Ph. D. in Mycology and Plant Pathology with experience on plant protection preferably in Extension.

V. Posts in the grade of Rs. 700-1600

1. Assistant Professor of Botany—(1)
2. Assistant Professor of Bio-Technology—(1)
3. Assistant Professor of Fruit Breeding and Genetic Resources—(1)
4. Assistant Professor of Forestry—(1)
5. Assistant Scientist of Agril. Economics—(1)
6. Assistant Scientists of Vegetable Crops—(2)
7. Assistant Scientists of Horticulture—(4)
8. Assistant Scientists of Mycology and Plant Pathology—(3)
9. Assistant Entomologist—(1)
10. Assistant Agronomist—(1)
11. Assistant Scientist of Forestry—(1)
12. Assistant Scientists of Agril. Statistics and equivalents—(3)
13. Assistant Horticultural Technologist—(1)
14. Assistant Extension Specialist of Post Harvest Technology—(1)
15. Assistant Extension Co-ordinator—(1)

Qualifications

Post at Sr. No. 1 : Ph.D. in Botany with specialization in systematic botany/dentrology.

Post at Sr. No. 2 : Ph.D. in Genetics with specialization in plant Bio-technology.

Post at Sr. No. 3 : Ph.D. in Horticulture/Pomology/Genetics/Plant Breeding with specialization in Fruit Breeding.

Post at Sr. No. 4 : Ph.D. in forestry.

Post at Sr. No. 5 : Ph.D. in Agriculture Economics.

Post at Sr. No. 6 : Ph.D. in Vegetable Crops/Olericulture.

Post at Sr. No. 7 : Ph.D. in Horticulture with specialization in Pomology.

Post at Sr. No. 8 : Ph.D. in Plant Pathology with specialization in Fruit Pathology/Apple scab.

Post at Sr. No. 9 : Ph.D. in Entomology with specialization in fruit entomology.

Post at Sr. No. 10 : Ph.D. in Agronomy.

Post at Sr. No. 11 : Ph.D. in forestry with specialization in Genecology/tree cytology.

Post at Sr. No. 12 : Ph.D. in Agriculture Statistics.

Post at Sr. No. 13 : Ph.D. in Horticulture/Pomology/Food Technology with specialization in fruit and vegetable preservation.

Post at Sr. No. 14 : Ph.D. in Horticulture with specialization in post harvest technology.

Post at Sr. No. 15 : Ph.D. in Extension Education/Agriculture Extension/Horticulture/Forestry and allied discipline.

Note : (1) For posts at Sr. No. III (4) and IV (4)

In case a suitable candidate with Ph.D. (forestry) is not available, then a candidate having M.Sc. (forestry)/M.Sc. with AIFC would also be eligible.

(2) For posts at Sr. No. V (1 to 15) in the scale of Rs. 700-1600

(i) Ph.D. degree in the concerned subject relaxable to M.Sc. (for posts at Sr. No. 4 and 11 M.Sc. forestry/M.Sc. with AIFC) with consistently good academic record.

(ii) In case a candidate selected for appointment holds Master's degree, he will have to obtain Ph.D. degree within 8 years of the date of appointment failing which he shall cease to earn increment(s) till he obtains Ph.D. degree.

VI. Non-teaching posts (State-scale)

1. Instrumentation Engineer—(1) (Rs. 940-1850)
2. Photographer—(2) (One Res. for SC) (Rs. 570-1080)
3. Artist-cum - Photographer— (1) (Rs. 570-1080)
4. Auto-Electrician—(1) (Rs. 400-600)
5. Semi-Professional Assistant (Reserved for SC)—(1) (Rs. 450-800)

Qualifications

Post at Sr. No. 1 : Bachelor Engineering in Electronics with two years experience in design and maintenance of micro processor based instruments.

OR

3 years diploma in Electronics with 5 years working experience in an Institute of repute.

GATE-89
GRADUATE APTITUDE TEST IN ENGINEERING
A REQUIREMENT FOR ADMISSION TO
POST GRADUATE PROGRAMME
GATE-89 will be held on
SUNDAY, FEBRUARY, 12, 1989
Details will be announced in
October, 1988
ORGANISING INSTITUTE
INDIAN INSTITUTE OF TECHNOLOGY
KHARAGPUR
IPB

Post at Sr. No. 2 : Atleast matriculate having a post-matric certificate/diploma in Photography for a minimum duration of one year from recognised University/ Institution.

OR

Atleast matric having 3 years experience in microphotography and field photography and conversant with developing, printing and positive slide preparation etc., the candidate will be asked to give a practical demonstration of the knowledge and ability.

Post at Sr. No. 3 : Matric with 3 years experience in photography (Black and White, Coloured) and dark room work. Preference will be given to the candidates with diploma course in Commercial Art and Video Photography.

Post at Sr. No. 4 : National Trade Certificate with three years experience as Auto-Electrician in Government or reputed workshop.

OR

Middle with about 4 years experience in the line, should have full knowledge of Dynamo repairs, Armature winding, battery charging and other minor and major electrical repairs of vehicles. Capable to using electrician testing apparatus of all kinds used in fault detection, electric machine and components.

Post at Sr. No. 5 : (1) Matric 2nd division or Higher Secondary of a recognised University/Board and Certificate in Library Science.

(2) Candidate shall have to qualify type test with a speed of 30 WPM within a period of one year, failing which he/she shall not be eligible to earn annual increment.

General Instructions

1. **Higher pay admissible in the case of meritorious candidates.**
2. Applicants already in service must send their applications through proper channel.
3. The University reserves the right not to fill up any of the posts advertised.
4. Applications received after the last date fixed therein may be rejected without making any reference to the candidate. Applications on plain paper also liable to be reject ed
5. Benefits of Contributory Provident Fund-cum-Gratuity and leave etc., as per University rules.
6. Other allowances on pay will be permissible as per rules of the University from time to time.
7. Other things being equal, preference will be given to SC/ST candidates, who are considered fit, for the posts under Sr. No. V (1 to 15).

Application forms can be had from the Registrar, Dr Yashwant Singh Parmar University of Horticulture and Forestry, Post Office Nauni, District Solan (Himachal Pradesh)-173230 by sending application fee of Rs. 10/- in the shape of crossed Indian Postal Order(s) payable to the Comptroller of this University alongwith a self-addressed envelope of size 23 x 10 cms.

Applications complete in all respects with attested copies of testimonials should reach the Registrar by **30.9.1988**.

Candidates applying from abroad may send their applications on plain paper giving particulars of date of birth, examination passed (from High School onwards) with division and percentage of marks obtained in the various examinations teaching/research/ extension experience with a list of publications, if any, so as to reach the Registrar by **15.10.1988**.

B. S. Nainta
REGISTRAR

TATA INSTITUTE OF SOCIAL SCIENCES

DEONAR, BOMBAY-400 088

Announces

Post M.A. Certificate in Research Methodology (one semester Commencing from November 28, 1988).

Eligibility : Master's Degree in one of the social sciences or social work of a recognized university with an overall of 50 per cent of the marks or an average 'B' grade. Candidates who have appeared for the qualifying examination may apply in anticipation of their results.

Objectives : The programme is designed specially to equip post M.A. scholars with the requisite knowledge and skills in social research methodology so that they can carry out research projects (doctoral and other) with competence and confidence.

A copy of the prospectus and application can be obtained from the Assistant Registrar (Academic) of the Institute by sending a Demand Draft of a Bank for Rs. 25/- in favour of the Institute.

The last date for receipt of the completed application form with a registration fee of Rs. 25/- is October 31, 1988.

N. Krishnamoorthy
REGISTRAR

BHARATHIAR UNIVERSITY

COIMBATORE-641 046

Advertisement No. 7460/B5/88

Dated : 17th August '88

Applications are invited for the following posts :

1. Department of Mathematics

No. of Posts

Professor 1 (SC/ST)

Reader 2 (SC/ST-1; BC-1)

Specialisation

Computer Mathematics/Programming Languages/Operations research/ Functional Analysis/Optimisation Techniques/Differential Equations/Algebra/ fluid mechanics.

2. Department of Statistics

Professor 1 (SC/ST)

Reader 2 (OC-1; BC-1)

Lecturer 1 (SC/ST)

Specialisation

Sampling (Theory and Practice)/ Design of experiments/Statistical Quality Control/Reliability/Statistical Inference.

3. Department of Botany

Professor 1 (SC/ST)

Specialisation

Plant Biochemistry/Forest Botany

Lecturer 2 (OC-1; SC/ST-1)

Specialisation

Plant Genetics/Plant Anatomy/ Ethnobotany

4. Department of Physics

Reader 1 (SC/ST) : Laser Physics

Lecturer 2 (SC/ST-1; OC-1)

Specialisation

Applied optics/Thin film Physics/ Solid State devices/ Super conductivity.

5. Department of Chemistry

Reader 1 (SC/ST)

Specialisation

At the M Sc. Level: General chemistry/Organic Chemistry (special)

At the Ph.D. Level

(i) Heterocyclic Chemistry

(ii) Organic Photochemistry

(iii) Natural products chemistry

Lecturer 2 (SC/ST 1; BC-1)

Specialisation

At the M.Sc. Level : General chemistry/Organic chemistry (Special)/Physical chemistry / Polymer Chemistry ; **at the Ph.D. Level** : Modern Reagents/Organic Photochemistry / Electro Chemistry Quantum chemistry / Spectroscopy / Fibre-Chemistry/Solid state chemistry/ Molecular Dynamics.

6. Department of Environmental Studies

Professor 1 (OC)

Reader 1 (SC/ST)

Lecturer 2 (SC/ST-1; BC-1)

Specialisation

Environmental genetics/Microbiology/Environmental Physiology/Environmental pollution and toxicology.

7. Department of Economics

Reader 2 (OC-1; SC/ST-1)

Specialisation

Agricultural Economics/Econometrics/Applied Economics/Industrial Economics

Lecturer 1 (SC/ST)

Specialisation

Local Finance/Industrial Economics/ Econometrics/Cooperation/Agricultural Economics.

8. Department of Sociology

Professor 2 (OC-1; SC/ST-1)

Specialisation

Industrial Sociology/Rural Development/Rural Sociology.

Reader 1 (SC/ST)

Specialisation

Urban Sociology/Rural Development/Rural Sociology.

9. Department of Psychology

Reader 1 (SC/ST)

Specialization in personality and guidance experience at M. Phil & Ph.D.

Lecturer 1 (OC)

Specialization in Personality and Motivation - Counselling—applied Psychology.

10. Department of Population Studies

Professor 1 (SC/ST)

Reader 2 (OC-1; SC/ST-1)

Specialisation

Population Economics/Social Demography/Migration/Fertility.

Qualification & Experience

1. Professor

Consistently good academic record with first or second class (not below 55% or 'B' plus) Post-Graduate degree in the subject or related subject and a Ph. D. degree in the subject with not less than 10 years of Post-Graduate teaching and/or research experience out of which not less than 3 years should be in a cadre not below than that of a Reader in the University and published research work of high standard. Evidence of being actively engaged in research and experience in guiding research work at Doctoral level.

2. Reader

Consistently good academic record with first or second class (not below 55% or 'B' plus) Post-Graduate degree in the subject or related subject and a Ph.D. Degree in the subject with not less than 5 years of Post-Graduate teaching and/ or research experience out of which not less than 3 years should be in a cadre not below than that of a Lecturer in the University and published research work of high standard. Evidence of being actively engaged in research and experience in guiding research.

3. Lecturer

Consistently good academic record with first or second class (not below 55% or 'B' plus) Post-Graduate Degree in the subject or related subject and a Ph.D. degree in the subject with not less than 2 years of Post-Graduate teaching and/or research experience.

Desirable

Publication of research work of high standard in the subject.

Scale of Pay

Professor : Rs. 1500-60-1800-100-2000-125/2-2500.

Reader : Rs. 1200-50-1300-60-1900.

Lecturer : Rs. 700-40-1100-50-1600.

(To be revised as per UGC scales of pay.)

The Syndicate reserves the right to fill or not to fill any or all of the above posts.

Maximum Age as on 1-8-1988

For Professors : 50 years.

For Readers : 45 years.

For Lecturers : 40 years.

Application forms can be had from the Registrar, Bharathiar University, Coimbatore-641 046 on requisition accompanied by a self-addressed Rs. 1.40 paise stamped envelope (25 cm. × 10 cm). Attested copies of certificates showing qualifications, age, community, experience, etc., should be sent along with the application in the prescribed form (in Eight copies) together with Registration Fee of Rs. 10/- in the form of crossed Indian Postal Order dated not earlier than 1-8-'88 drawn in favour of the Registrar, Bharathiar University, Coimbatore-641 046.

Any candidate applying for more than one post submit separate applications for each post.

Candidates in service shall submit their application through proper channel.

Completed applications should reach

the Registrar on or before **20th September, 1988**.

Incomplete applications and applications without the required registration fee will not be considered.

Note 1. Those who have applied earlier in response to the advertisements No. 6998/E1/87, dated 29-10-'87 and 2-1-1988, need not apply again.

2. In case SC/ST and BC candidates with suitable Qualification and Experience are not available other candidates will be considered against these vacancies as per Roster Norms.

REGISTRAR

VICTORIA JUBILEE TECHNICAL INSTITUTE

MATUNGA, BOMBAY-400 019

Advt./1/1988—Degree

Vacant Posts (Degree Staff)

Professors

*1. Mechanical Engineering (Automobile Engg.)—1 post (for S.T. Category) (3rd Advt.)

2. Electronic Engineering—1 post

*3. Computer Engineering—1 post

*4. Computer Application—1 post (for S.C. Category) (1st Advt.)

4(a) Production Engineering—1 post

Assistant Professors

5. Electrical Engineering—1 post (for S.T. Category) (1st Advt.)

6. Industrial Engineering—1 post (for S.C. Category) (2nd Advt.)

7. Technical Chemistry (Paints Technology/Foods)—2 posts (one for S.C. Category) (2nd Advt.)

8. Electronic Engineering—1 post

9. Computer Engineering—1 post

*10. Computer Application—1 post

Lecturers

11. Mechanical Engineering—2 posts (one for S.C. Category & one for S.T. Category) (2nd Advt.)

12. Mechanical Engineering (Material Technology)—1 post.

13. Production Engineering—1 post (for S.C. Category).

14. Civil Engineering—1 post.

15. Civil Engineering—5 posts (one for S.C. Category & one for S.T. Category) (2nd Advt.) (one for S.C. Category) (1st Advt.)

16. Electronic Engineering—3 posts (one for S.C. Category) (2nd Advt.)

17. Computer Engineering—3 posts (one for S.T. Category) (1st Advt.)

*18. Computer Application—3 posts (one for NT & DT Category) (2nd Advt.)

19. Structural Engineering—2 posts (one for NT & DT Category) (2nd Advt.)

20. Lecturer-cum-Asst. Workshop Superintendent (Weaving) Text. Deptt.—1 post (for S.C. Category) (2nd Advt.)

Lecturers

21. Lecturer in Chemistry (Non-Technical)—2 posts (one NT & DT Category) (2nd Advt.)

22. Lecturer in Textile Physics—1 post.

(* These posts are under post-graduate scheme).

Posts reserved for backward class candidates are interchangeable among the different categories of the backward classes.

If suitable backward class candidates are not available open category candidates found suitable may be appointed on temporary basis.

Scales of Pay

Professors : Rs. 1500-60-1800-100-2000-125/2-2500.

Assistant Professors : Rs. 1200-50-1300-60-1900.

Lecturers (Technical) : Rs. 700-40-1100-50-1600.

Lecturer Non-technical : Rs. 700-40-1100-50-1300-Assessment-50-1600.

Gross Emoluments

Position	At the minimum of the scale	At the maximum of the scale
	Rs.	Rs.
Professor	4162.50	6514.00
Asst. Professor	3789.50	5122.00
Lecturer	2570.00	4352.00
Lecturer-cum-Asst. Workshop Supdt.	2570.00	4352.00

Capable and motivated candidates will have adequate opportunities for teaching at Post-graduate level, conducting research and getting associated with industry sponsored projects and econsultancy work.

Age Limit : Not more than 35 years (relaxable in exceptional cases).

Applicants who are already employed shall send their applications through proper channel.

Breaks in academic career if any, should be accounted for.

Qualifications for various posts are as prescribed by the University of Bombay.

Details regarding qualifications etc. and the application forms are obtainable from the Office of the Principal & Secretary on request with self-addressed envelope (10 cm. × 22 cm.) stamped Rs. 3/-. Applications in the prescribed form complete in all respects, must reach V.J.T.I. on or before **30th Sept., 1988.**

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Printed by Navchetan Press (P) Ltd. at Navjeevan Printers, 1-E/2, Jhandewalan Extension, New Delhi-110055. Tel. 529157

University News

IONDAY, SEPTEMBER 5, 1988 Rs. 2.50

V.S. Arunachalam (right), Scientific Adviser to the Minister of Defence, Government of India, delivered the convocation address at the Sri Venkateswara University. Seen on his right are Professor S.V.J. Lakshman, Vice-Chancellor and Smt. Kumudben Joshi, Chancellor and Governor of Andhra Pradesh.

AMERICAN STUDIES RESEARCH CENTRE

HYDERABAD-500 007

Applications are invited for the position of

ACADEMIC FELLOW

(History/Social Sciences)

The ASRC is the largest library and centre in Asia for research on all topics relating to the United States of America. It serves scholars from India and South Asia writing post-graduate theses and mature works of scholarship. The Academic Fellows, of which there are normally two, are intimately involved in the academic administration of the Centre. They guide scholars, choose books for the collection (which now numbers approximately 145,000 volumes), co-edit the **Indian Journal of American Studies** as well as symposia and commissioned works, participate in courses in Hyderabad and around India, and represent the Centre at seminars and conferences.

QUALIFICATIONS

The candidate for this position must be totally fluent in English and possess a Ph.D. either in some area of American Studies or in a discipline requiring competence in American scholarship. Applicants in history, political science, sociology, economics, public administration and law are encouraged. They must be thoroughly familiar with America and American work in their fields.

A Minimum of eight (8) years teaching and research experience is essential for appointment as a Senior Fellow. Applicants with five (5) years teaching and research experience may also apply and be considered in the event that a suitable candidate is not available at the Senior level. Candidates must be less than 60 years of age during the tenure of this position. Exceptions can be made, however, if Merit warrants.

Candidates will be classified according to their credentials. The contract will be for an initial period of three (3) years, which may be extended to a total of five (5) years.

Pay Scales are:	Senior,	Rs 4500-150-5700-200-7300
	Junior,	Rs 3700-125-4700-150-5300

Allowances admissible in the scales follow those of Central Universities.

Candidates called for interview will be paid first-class round-trip train fare and given local accommodation.

Applications on plain paper giving full particulars, through proper channels, and listing up to three (3) referees, should be sent **before 30 September, 1988** to :

The Director
AMERICAN STUDIES RESEARCH CENTRE
HYDERABAD-500 007

27 SEP 1988
C.F.T.R.I. MYSORE

UNIVERSITY NEWS

VOL. XXVI SEPTEMBER 5
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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

National Literacy Mission (1988)

A REVIEW

S. Y. Shah*

The Government of India's policy towards adult education has undergone several and significant changes over the years. At different points of time various factors and forces have influenced the policy. Of these, three factors seem to be common and crucial : (i) changes in the Government, (ii) interest and involvement of the bureaucracy, and (iii) budget allocation. In 1985 when there was a change in the Government of India, an official decision was taken to formulate a new education policy with a view to "reshaping the education system to enable it to meet the challenges of the future" and accelerate the pace of national development.[1] The New Education Policy (NEP) which was finalised in 1986 after a series of consultations and debates at various levels gave a new orientation to adult education in India. Recognising the importance of adult education as a tool for reducing economic, social and gender disparities, the NEP stressed that the "whole nation must pledge itself to the eradication of illiteracy particularly in the 15-35 age group."[2]

The operational details of the policy identified the strategies of involving different official and non-official agencies in the implementation of adult education programme. For the first time in the history of Indian adult education, the liquidation of illiteracy was considered as a societal and technological mission. To quote :

> Eradication of Illiteracy will be launched as a Technical and Societal Mission. Such a Mission approach pre-supposes that we are at the threshold of momentous Scientific, technological and pedagogic changes, which may, besides augmenting the range of the communication systems, make the process of acquiring literacy quicker and easier. In pursuance of the Mission, effort will be made to (i) improve the physical environment, power supply and the illumination, etc., of the Adult Education Centres; (ii) facilitate and expedite preparation, printing, distribution of topical and relevant learning materials and learning aids on a decentralised basis; (iii) enrich the process of learning with audiovisual materials by enlarging the range of Television and Radio broadcasts and also by developing cheaper and sturdier equipment; (iv) reduce the time lag between pedagogic research and the assimilation of its results in the teaching learning processes; and (v) create inter-active environment between the electronic teaching devices and the learners.[3]

Subsequently in 1987, when the Government of India identified eradication of illiteracy as one of the five National Missions[4], the whole machinery of the State became alert and action oriented to the cause of adult education. However, it was the formal launching of the National Literacy Mission (NLM) by Prime Minister of India on 5th May, 1988, that gave the literacy programme the much needed prestige and publicity[5]. Today, NLM document has emerged as *the magna carta* of Indian adult education.

The basic premise of the NLM that the problems of illiteracy can be solved mainly through the application of technology and scientific

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**Asstt. Director, Adult, Continuing Education & Extension Unit, Jawaharlal Nehru University, New Delhi-110067.*

research may itself be questionable. While it would be possible to find solution to some of the problems through the application of science and technology, the process calls for detailed planning which may be time consuming and may require additional human and material resources. Are we in a position to mobilise such resources ? In view of the limited financial resources at the national level, it may be necessary to plan and develop locally available low cost rural based technologies instead of importing technologies from developed nations.

The Mission approach is based on certain assumptions. The first assumption that there would be continuance of political will at all levels for the achievement of Mission goals raises certain questions.[7] Involvement of political parties in the formulation of policies is only one aspect of the manifestation of political will. India being a federal country with different political parties in power in different States, is it possible to have the same degree of political commitment at all levels? Since in the Indian context the State plays a dominant role in the implementation of adult education programmes, the Government of India (Centre) though the main funding agency will have very little control, and then, would it not be too naive to assume that there would be a political will?

The second assumption that a national consensus would be created for mobilisation of social forces also seems to be questionable in view of the ideological differences prevailing among the ruling parties at the Centre and in States.[8] Any attempt towards creation of national consensus for mobilisation of social forces is likely to be confronted with several obstacles. A great deal of caution will be necessary in identifying the social forces for some of them maintain close links with fanatical and fascist organisations.

The third assumption revolves around seeking the participation of people in the Mission[9]. It may be easier to seek people's participation. But how to ensure their active and continuous participation? Perhaps, the delegation of certain responsibilities to people may be one of the effective means.

Objectives and Operational Strategies

The National Literacy Mission has a time bound objective of imparting functional Literacy to 80 million illiterate persons in the age of 15-35 years by 1995.[10] It aims at achieving the objective in two phases ; In phase I, the NLM has a target of imparting literacy to 30 million illiterates by the year 1990; and in phase II, it has a target of 50 million to be covered in the next five years. The thrust of the NLM will be on women and rural illiterates since 62.7 per cent of the illiterates are women and 85.5 per cent illiterates belong to rural areas.

Imparting functional literacy to 80 million people within a span of seven years is a challenging task which requires multidimensional strategies and massive infrastructure. The strategies are of two types :

(i) *Strategies related to people*

(a) *Motivation*

The NLM recognises the importance of people and their power in making the programme of adult education successful. The NLM document rightly identifies the key role of motivation in literacy and suggests ways and means of developing and sustaining the motivation of learners as well as instructors. In a "Design for Motivation—Centred Programme" the document suggests certain "content inputs" viz. programme of skill development, health related issues of women and children, recreation and cultural activities, conscientization, religious discourses and "form related inputs" viz. dedicated instructor, improved learning atmosphere, attractive learning materials, etc.[11] Of all the inputs it is the commitment and competence of the instructor that makes or mars the programme and often it becomes extremely difficult to attract such dedicated and dynamic volunteers to work as instructors on a nominal honorarium of Rs 100 (one hundred) per month on an average of two hours per day on all working days and that too, in an 'unattractive' literacy centre. The official policy of categorising the instructor who is the key grassroot functionary, as a part-time worker or a volunteer, needs to be re-examined in the context of the changing socio-economic realities of Indian society. While the number of voluntary agencies has been increasing[12], the spirit of voluntarism among the people seems to be gradually decreasing as the experience of the organizers of Adult Education Programme show how difficult it becomes to lure a volunteer to run a centre.

(b) *Peoples' Participation*

The NLM envisages peoples' participation as a part of total strategy for mass mobilisation and recommends regular use of mass media, cultural caravans and training of youth.[13] The NLM suggests the use of different techniques to seek the involvement of different groups of people. Through the publicaion of special features and coverage of news items having a bearing on adult education, the NLM suggests that the leading newspapers should be used to generate a positive attitude towards adult education especially among the influential sections of society. Unless the governmental and non-Governmental agencies commission special articles and provide special incentives to Press, the coverage of adult education will remain too inadequate and insignificant. In this connection, it may be noted here that the recent launching of the NLM by the Prime Minister, considered to be a landmark in the history of Indian adult education, did not get a front page coverage in most of the leading newspapers! However, the *Door Darshan* (Indian Television) gave a live coverage of one hour programme which seems to have succeeded in catching the attention of the public. The television programmes and films are powerful media of public education and an attempt to use them should not be delayed till new programmes are developed. Simultaneous efforts will have to be made to select the relevant TV and feature films from the already available stock and put them to regular use.

(c) *Voluntary Agencies*

In the years to come, the Government of India, proposes to involve voluntary agencies on a much larger scale in organising adult education programmes. Voluntary agencies are being considered as "partners in Literacy Action" and the NLM has envisaged the participation of 300 agencies during 1987-88 It is expected that the number of voluntary agencies participating in adult education would increase threefold over the next three years.[14] However, in terms of financial allotment, the amount earmarked for voluntary agencies does not increase uniformly. While a sum of Rs. 100 million was set aside to involve 300 voluntary agencies in the programme of adult education during the year 1987-88, it is estimated that only Rs. 240 million would be required to involve 1000 voluntary agencies during 1989-90![15] The Government policy of increasing the number of voluntary agencies over the next three years pre supposes that either there are adequate number of such agencies interested in taking up adult education programme or new agencies would be coming up in due course. One wonders whether the decision to increase the number of agencies may not pave the way for the creation of a group of commercially oriented agencies? One could argue that by increasing the number of voluntary agencies, the base of the voluntary sector could be widened. But, then, will it not be advisable as well as advantageous to expand the scope of the participation of the few tried and tested voluntary agencies in the first phase before inviting the new ones?

(d) *Jan Shikshan Nilayams*

The NLM has focussed its attention not only on improving the ongoing programmes by introducing participatory training techniques, better supervision, distance learning techniques, increasing the number of women instructors and introducing literacy in spoken language but also strengthening the continuing education programme through the establishment of Jan Shikshan Nilayams[16] (JSN) (peoples' centres for learning). It is proposed to set up a JSN for a population of 5000 people and it is expected that nearly 60,000 JSNs would be opened by 1990. Each JSN is expected to provide a library and a reading room, short duration training programmes relating to subjects such as health, family welfare, agriculture and organize sports and adventure activities, recreational and cultural facilities, and evening classes for upgradation of literacy and numeracy skills. A sum of Rs. 1100 millions have been set aside to establish 60,000 JSNs by the year 1990.[17]

(e) *Youth*

The NLM aims at making literacy, people's mission and has sought the involvement of different governmental and non-governmental agencies viz. universities, colleges, teachers, trade unions, public sector undertaking and defence personnel. A sum of Rs. 100 million have been set aside to impart literacy to 1.72 million illiterates under the Mass Programme of Functional Literacy.[18] Under this scheme, tt is expected that literacy would be imparted according to "Each One Teach One" pattern where a student volunteer imparts literacy to an adult within a duration of 150 hours (spread over four months) and with

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TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

the help of a specially designed literacy kit. The kit includes a set of cards/basic literacy materials; booklet consisting of topics related to the learners' life for supplementary reading; booklet on arithmetic; assessment sheet for assessing the learner's progress; teacher's guide and personal information of learners as well as Instructors, a note book, a pencil and an eraser.[19] The NLM has emphasised the importance of preparing attractive teaching learning materials on a wide scale and has identified the agencies to undertake the job. However, it is equally important that sufficient care be taken to distribute the materials in time and in adequate quantity to the learners lest the programme should suffer.

(ii) *Strategies related to Technology and Budget*

The central concern of NLM revolves around the application of technology to modernise the literacy programme. The following technological inputs have been suggested by the NLM : (i) Improved lighting arrangements either through electrification or using solar energy or hurricane lanterns, (ii) High quality teaching-learning aids and equipment, (iii) Use of new technologies for learning, and (iv) Use of computers in the management of NLM.[20] The NLM suggests gradual introduction of technology. In the first phase, it is proposed to introduce the technology in 10 per cent of the selected districts, comprising 20 well endowed and 20 under endowed districts.[21]

A well defined Mission Management Structure and a Computerised Management Information System have been suggested by the NLM.[22] It is suggested that at the National and State levels, there would be a National and a State Authority of Adult Education respectively. These Authorities would be entrusted with the responsibility for planning and implementation of the programme at the National and State levels. Technical resource support to these Authorities would be provided by the proposed National Institute of Adult Education, and by the State Resource Centres respectively.[23]

It is calculated that a total sum of 5500 million would be required to impart literacy to 30 million people during the period 198-790. The voluntary agencies have been provided Rs. 500 million to make 2.5 million people literate. With a 9 per cent of budget, they are expected to cover 8 per cent of the illiterate population, whereas the State sector is expected to cover 54 per cent of illiterates with 54 per cent of the budgetary allocation. It is expected that nearly 15 per cent (4.68 million) of the target population of illiterates would be made literate through the Mass Programme of Functional Literacy with a budgetary allocation of 1.8 per cent (Rs. 100 million).[24] The sector-wise budgetary allocation viz. the expected coverage shows the high expectations of the Government from the non-governmental agencies and youth.

The NLM is no doubt an exemplary document which covers the entire gamut of Indian adult education in a comprehensive manner. Unlike the earlier documents, the NLM provides the action programme, time frame and cost estimation and the requirements of infrastructure at different levels. Since the government has already set up the task force, allotted the funds and formally launched the NLM on 5 May, 1988, one could be optimistic about the official concern and commitment towards adult education. Perhaps, one of the reasons for the active involvement of the government in the formulation as well as implementation of the adult education policy, may be traced to personal leadership provided by Anil Bordia, whose interest in adult education is well known. He could not only persuade the ministers and politicians but also mobilise the state machinery to promote the cause of adult education in India. His success was perhaps also due to Sam Pitroda, the Technical Adviser to the Prime Minister of India, whose technological inputs have strengthened the literacy programme. So it may be argued that in making the current programme of adult education as one of the top priority programmes of the Government of India, the top bureaucrats have played a key role. But should the progress of adult education be left to the care of bureaucrats or to the people ? What role should the people and their organizations play in strengthening the programme ? These remain vital questions that would have to be answered soon.

The future of Indian Adult Education depends to a great extent on the successful implementation of the National Literacy Mission which implies continuous commitment of the State, dynamic leadership of key personnel viz., Education Minister, Education Secretary, Director of Adult Education, etc. massive mobilisation of resources and its full and proper utilisation, strong support of professional organizations, and above all active participation people. The central issue in the successful implementation of adult education programme revolves around the role of the State vis-a-vis the people. In examining this role, the following questions, amongst others, would have, to be addressed : Should the role of the State be confined to funding the programme as well as running the bulk the programme through government agencies ? Or, hould the State give a dominant role to non-governental organizations in adult education programme ? re the voluntary agencies prepared to accept a eater role in the adult education programme ? If , do they still want to depend on the State for nds ? Can they raise adequate resources on their wn ? Can institutions or mechanisms be developed enable them to do so ? ☐

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1. Government of India, *Challenge of Education—a policy perspective* (New Delhi : Ministry of Education, 1985), See Foreward.
2. Government of India, *National Policy on Education*, 1986 (New Delhi : Ministry of Human Resource Development, 1986), p. 9.
3. Government of India, *Programme of Action;* (New Delhi : Ministry of Human Resource Development, 1986), p. 136.
4. The Literacy Mission is the third priority in the category of the following five National Missions :
   - (i) Immunisation Programme for Infants.
   - (ii) Drinking Water in Rural Areas.
   - (iii) Eradication of Illiteracy.
   - (iv) Communication in rural areas.
   - (v) Production of edible oil.
5. For the first time in the history of India, the Prime Minister and his Cabinet colleagues, members of parliament and many officials of Government, representatives of several Adult Education Agencies participated in a programme connected with literacy. The programme was given a live coverage in the National Television and most of the National dailies also reported the event.
6. Government of India, National Literacy Mission (New Delhi : Ministry of Human Resource Development, 1988), p. 5.
7. *Ibid.*
8. *Ibid.*
9. *Ibid;* pp. 19, 24
10. *Ibid;* p. 74.
11. *Ibid;* pp. 22-23.
12. While in 1979, there were 408 voluntary agencies working in the field of adult education, in 1987, their number increased to 506. See *Directory of Voluntary Organizations working in the field of Adult Education;* (New Delhi: Directorate of Adult Education, 1979).

    Directory of Voluntary Organizations working in the field of Adult Education (New Delhi : Directorate of Adult Education, 1987).
13. *Ibid;* pp. 24-25.
14. *Ibid;* p. 26.
15. *Ibid;* p. 57.
16. *Ibid;* pp. 32-33.
17. For details see *Jan Shikshan Nilayam* (New Delhi: Directorate of Adult Education, 1988) pp. 5-6.
18. *National Literacy Mission;* pp. 30-31 & 56-57.
19. For details see *Mass Programme of Functional Literacy* (New Delhi : University Grants Commission, 1986) Annexure D.
20. *National Literacy Mission;* pp. 37-39.
21. *Ibid;* p. 40.
22. *Ibid;* pp. 41-43.
23. *Ibid;* pp. 44-45.
24. See Agency wise coverage of Adult Illiterate in the Age-group 15-35 during 1987-90 and Financial Requirement of the NLM (1987-90) *Ibid;* pp. 56-57.

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Population Education and the Indian University System

G. B. K. Hooja*

Although economists of the eminence of Dr. Gyan Chand and Prof. Brij Narain had tried to draw the attention of the Indian intelligentsia to the creeping menace of the population problem in India way back in the thirtees, it was to take more than 30 years before the danger of the threat would register itself with the thinking minds in the upper echelons of policy makers. Thus the year 1969 may be regarded as a landmark in this respect, when the idea of population education was crystallized in the National Seminar on Population Education held at Bombay, recommending the introduction of the elements of population education into the curricula of all stages of education. The National Seminar proceeded to define the concept of population education in the following terms :

(i) The objective of population education should be to enable the students to understand that the family size is controllable, that population limitations can facilitate the development of a higher quality of life in the nation and that a small family size can contribute materially to the quality of living for the individual family. It should also enable the student to appreciate the fact that for preserving the health and welfare of the members of the family, to ensure the economic stability of the family and to assure good prospects for the young generation, the Indian family of today should be small and compact with only two or three children.

(ii) Students at all levels have a right to acquire information about the effect of changes in family size and in national population on the individual, the family and the nation, so that this body of knowledge is utilized to control family size and national population with beneficial impact on the economic development of the nation and the welfare of the individual families.

It was just as well that the target group in the family education programme was deemed to be the younger generation which is yet to enter the reproductive age group, since the decisions about the size of a family are taken primarily at the individual level by the husband-wife team and depend on various factors, such as the cultural milieu, socio-economic necessity, psycho-religious pressures, level of awareness, etc., although in the long run they have a vital bearing on the health of the nation, socially, economically and politically.

Based on these recommendations, the National Council of Educational Research and Training (NCERT) has been developing over the years a host of curricular and instructional materials for use/adoption by the teaching institutions. Pedagogically, population education aims at value-oriented education by ensuring that educands inculcate socially desirable attitudes, widen their cognitive map and imbibe the spirit of human affiliation.

"The World Population Plan of Action", adopted at the World Population Conference held at Bucharest in 1974 gave a boost to this programme, when it stated that "Educational Institutions in all countries should be encouraged to expand their curricula to include a study of population dynamics and policies, including, where appropriate, family life, responsible parenthood and the relation of population dynamics to socio-economic development and to international relations."

Ten years later, the issue again came up at the International Conference held at Mexico in 1984. In India, the subject assumed increased importance, when the National Policy on Education (1986) adopted "Promotion of Observance of Small Family Norms" as one of the major goals of our educational system. Small family norm now constitutes one of the ten core curricular areas to which students of every stage must be adequately exposed. It may be noted that almost half of the core-curricular areas identified in the programme of Action on National Policy of Education (1986) have a bearing on the concerns that are directly related to the envisaged objectives of population education. In specific terms, Population Education as an integral part of General Education seeks to focus on 5 sets of core messages recommended by 1984 Unesco Regional workshop for the Development of Adequate Learning Requirenents in Population Education and one additional nessage. These are :

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1. Family size and family welfare.
2. Delayed marriages.
3. Responsible parenthood.
4. Population Change and Resource Development.
5. Population-related beliefs and values.
6. Status of Women.

Having defined the concept of Population Education, general and specific objectives and suitable contents that were expected to bring about the identified objectives, the next step was to incorporate these Population Education contents into the ongoing curricula, since it was realized that its knowledge base derives from a number of existing academic disciplines. Thus six major areas were identified for the development of curricular and instructional materials on Population Education in India. These are ;

1. Population Dynamics.
2. Economic Development and Population.
3. Social Development of Population.
4. Health, Nutrition and Population.
5. Biological Factors, Family Life and Population.
6. Environment and Population.

It is appreciated that these areas are not mutually exclusive. These overlap at several points. Novertheless, they provide clear-cut channels to develop properly articulated concepts and contents related to Population Education. Since Population Education has no well defined content area of its own and is being integrated as an educational innovation into the existing subjects, the effective transfer of learning in this area shall depend to a large extent on the teacher and the teaching methodologies. The teaching of Population Education requires not only the subject competence and an inquisitive frame of mind to keep track of the sources and frontiers of ever growing knowledge in this area, but also mastery of non-traditional as well as traditional teaching methods. The success in conceptualisation and transaction of Population Education, therefore, depends on how information transformation and transfer of learning take place. While the content is important, the method is no less important, particularly when the objective is to develop awareness and inculcate rational attitudes for positive decision making.

It may be assumed that when a student enters a university, he has had a fair grounding in the concept and content of Population Education as a result of increasingly growing emphasis on this subject at the School stage. At this stage of his academic career, he is not expected to be handed down ready made answers. The ideal teaching method would be to give him an opportunity to explore his own answers and evaluate available alternatives in a given situation. Thus the teaching methodologies to be employed could be the inquiry or discovery approach, problem-solving values qualification, and game/role playing.

"The inquiry approach is a teaching style where the learner, with the minimum guidance from the teacher seeks to discover and create an answer to a recognized problem by :

1. Defining a problem
2. Formulating the hypothesis/es
3. Gathering data
4. Reporting data/findings
5. Testing the hypothesis/es
6. Formulating a conclusion
7. Stating one's commitment or applying the conclusion.

Inquiry is not the discovery of an answer that is lifted from a book but rather, the development of an answer by the learner himself, based on the result of his own investigations. This means that in his search for the answer to the problem, the student pores over several sources of relevant information, analyzes these, organizes the information, concludes and decides on the best alternative solution. Briefly defined, the inquiry approach means getting answers to questions through the collection and analysis of data." (Unesco) The teacher's role is limited to act as a facilitator by providing content, both factual information and information relating to different value positions, leaving the learner to evaluate the range of options for the given issue.

India today faces a grim situation so far as the population problem is concerned. It is estimated that by the middle of the next century India will surpass China to become the world's most populous country. China, with a larger population base at present, has a population growth of about one crore a year, while India is adding I. 5 crores a year to its population. Having realized that high population growth neutralizes development, China has set about the task rather seriously. It has inter-linked the family planning programme with other developmental activities, such as the quality and quantity of health care and education. Finding that late marriages and financially independent women had a bearing on birth rate, China has given added emphasis to improve the status of women. The best minds in India do appreciate this. Dayananda called for the marriage age for a male to be fixed at 25, over a hundred year ago, but our legislative and social leaders have yet to accept it. This status of women too leaves much to be desired.

It is here that the universities can play a vital role. To fulfil their validity, they must act as Light Houses in the areas under their jurisdiction. They must spread light, knowledge, destroy *tamas* (darkness) and lead the community at large to *jyoti* (enlightenment). They should come forward in a meaningful way to educate not only the students enrolled on their registers, but also the decision makers, the individual families and the policy makers, the legislators and the social leaders, who are in a position of authority to influence the individual decision makers in this game of numbers. In other words, they must undertake not only teaching and research, but also extension work in all seriousness.

There are over 170 Universities including Centres of Higher Learning in the country, with over 5,000 colleges dotted all over. Why can't they adopt as many villages (or towns) for area specific, time bound programmes in this field ? Here is a national challenge calling the best of minds and socially conscious groups to some action.

The Government of India has set up a number of demographic goals in respect of India's population stabilisation programme. The long term goal is to reach zero population growth rate by 2050 A.D., with an estimated population around 130 crores. The medium term goal is to reach Net Reproduction Rate of Unity (NRR : I) by 2000 A.D., with a birth rate of 21, death rate of 9 and infant mortality rate below 60. According to the Seventh Five Year Plan the goals to be reached by 1990 are : birth rate of 29.1, death rate of 10.4 and infant mortality rate of 87.

So far as goal perception is concerned, we seem to have emerged in the area of clarity, but there is still a lot of confusion about role perception. Who will bell the cat, is the star question. It is in this respect, that we look to the universities, not only as the repositories of knowledge (*gyaana*), but also as reservoirs of vast and bubbling youthful, energy which if properly harnessed and guided, can be depended upon to undertake the required action (*karma*), to meet the twin challenge of mass poverty and illiteracy facing the present generation. The university system has over the years developed a network of NSS and NCC units, and has a vast student force registered with it for a 3-year degree course. Why can't they be deployed to contact house-holders in their neighbourhood to communicate the message of family welfare, after being imparted the requisite skills by their Faculty ? Why can't 'each one teach one' be made an obligatory condition for the award of the much-coveted degree ? Why can't the TV and the AIR be made to cooperate with the universities and the colleges in this mission in a more determined way ? Similarly, why can't the banks and industrial houses be persuaded to support the universities in this mission ? Leaving the matter merely to the Government machinery would not do. Government should, of course, draw up a battery of incentives and disincentives for its work force and create a climate of awareness and inculcate desirable attitudes thereby, but *Raj Shakti* and *Lok Shakti* must unite to overcome the handicap of backwardness of India's sprawling masses; and in this Himalayan (*Bhaagiratha*) endeavour, the role of the universities is clear and inescapable. Will they rise to the occasion?

Indian Council of Medical Research

The Council proposes to appoint one **Assistant Director** for the Headquarters Office of the Council, New Delhi.

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The Pursuit of Science

Dr. V.S. Arunachalam, Scientific Adviser to Defence Minister, posed the question, "how do we pursue science and pursue it well ?" in his Convocation Address delivered at the 31st Annual Convocation of Sri Venkateswara University, Tirupati. Answering the question himself, Dr. Arunachalam referred to some rules "which are absolutely essential for science to thrive". He said, "It must have an environment. The environment is created by a kind of intellectual freedom, where there are no masters but only disciples. It must have a good library, meetings and discussions. And it must have people who are committed : studying, experimenting, understanding and interpreting. Science is not a career or a profession for them, but a way of life." Excerpts

Nowhere else can we see the act f creation as beautifully as we see the pursuit of science. The irth of science coincides with the irth of man. He began asking uestions about himself, about thers and about the universe he ived in. Some were unanswerable t first, but that did not deter him rom asking. Knowledge got ccumulated bit by bit and sometimes by leaps and bounds. There vere many heroes asking the right uestions, questions we never hought even existed and providing satisfactory answers. Knowledge s built that way. Sometimes a discovery here, and a proof there, shakes, or even destroys the very edifice; no discouragement that; the building again starts brick by brick. It is this which is exciting about Science. Science is very egalitarian and believes only in verification and proof : kings cannot command, nor generals order. They may at worst make the environment suffocating and science may even go underground; but the style does not change.

How then do we pursue Science, and pursue it well ? It is important for we must do good science not only at this great university but in our entire country. I wish there were some easy clues or secrets to share about this pursuance. Alas, there is none. There are some rules though, which are absolutely essential for Science to thrive. It must have an environment. The environment is created by a kind of intellectual freedom, where there are no masters but only disciples. It must have a good library, meetings and discussions. And it must have people who are committed : studying, experimenting, understanding and interpreting. Science is not a career or a profession for them, but a way of life. Good laboratories are needed as also facilities. It is all very well to say that great people did science with meagre resources. But these statements do not stand close scrutiny. Science is best done where facilities and scientists abound.

In Science the choice of the problem is all. Trivial problems yield only trivial solutions which are best forgotten early. There is thus a need to select problems with diligence, and pursue them well. There is a temptation to be a trend follower than a trend setter. Sometimes, this is advantageous, for more often than not, the original discoverers had no time to follow up and work out all the details and the consequences, and thus there may be opportunities for doing competent first class work with attendant benefits. But this can be carried too far. I know of cases in this country where some original work was followed by years of researches when neither the problems nor their consequences justified such an attention. These futile exercises lead to sterility of ideas, and universities become mere workshops to graduate Ph. Ds who do not get exposed to a real scientific challenges; the student merely follows the professor's and countless Ph.D. student predecessors' thoughts and even experiments. We must overcome this deficiency in Indian Science for we have too many such instances.

It is equally dangerous to attempt problems only because they are very fashionable. This can indeed be done, but calls for a tremendous capability and stamina on the part of the researcher. The laboratory and the attendant facilities must be able to stand the enormous demands such pioneering adventures may make. Otherwise one is left behind as fashions change very rapidly. Again, I know of many stories in the country where bright ideas could not be followed fast enough because of inadequate facilities, and what is worse, because of no encouragement. Not every pioneering contribution blossoms as a Raman Effect. The only way therefore is to go on attacking problems in one's field of competence, not spending decades over them but working long enough to reach some good results. Continuous work is essential, and as Lenin observed quantity often breeds quality. I must hasten to add that quantity here must mean a variety of problems. There is the story about the Nobel Prize winner Prof. S. Chandrashekar who did his award winning work on

Black Holes at a very young age. When that work was not well received, he did not give up bemoaning his luck; instead, he continued working for decades on a variety of problems, making in each one of them pioneering contributions. When the world received the Black Hole theory years later, they rediscovered Prof. Chandrashekhar as well. Perseverance with Science pays; not necessarily with the same problem.

One is always told at a young age that to be a good scientist you have to be a genius. Stories are told of the exploits of Newton, Einstein, and lately of Ramanujan. It is unfortunate these stories which blow out of proportion the genius side of these great men, put many young minds off Science, even at school. According to Peter Medawar, another Nobel Prize winner, one does not have to be a genius to do Science. An orderly and enquiring mind with enthusiasm to do Science and a willingness to learn and work hard is adequate. We must emphasise this side of being a scientist at our universities for we lose too many students to Engineering and Medicine. These are important areas no doubt, specially for our national development; but an over-emphasis can distort the country's very personality. An enquiring mind in other areas can get easily lost in the country's craze to turn everybody to an engineer or a doctor using whatever method, fair or foul.

A nation needs all kinds of people; philosophers, scientists, engineers, doctors, economists, poets, writers and all. Sometimes we need one kind more than others, but that should not deter us from pursuits in which we are qualified and are of interest. A nation's genius and a balanced culture is best built that way. Human mind is not tuned to only one profession. Only now with our studies of computers, we are slowly becoming aware of the almost limitless capability of human mind. We can only marvel at the speed, intuition, and focussing that our minds are capable of. Is it possible that we are on the verge of a revolution, where the human mind will be harnessed for greater challenges than at present ? One can only wonder.

Knowledge is unique, for it grows when shared. We must therefore share what we have learnt with all. Hence the great respect reserved for teachers in our Vedas. There is an urgent need today to rediscover this almost lost virtue in our society. We can be successful only when we are all ready to teach: teach in schools, colleges, in villages and towns. The revolution through knowledge begins early, at school and continues throughout life. I therefore earnestly hope that at least some of the graduates of this University take to teaching.

Knowledge gained must also be harnessed for the welfare of the society we live in. This is specially important to our country where there is stark deprivation in many areas. When our nation fought for Independence, we somehow seemed to have assumed that with Independence all our problems would be solved. We now know better.

There are so many pressing problems in our Society, some of them so very urgent and demanding, that we really do not know where to start. In our eagerness to see some of them solved at least, we push the problem to one sector or another. For instance, we expect the scientists to solve our drinking water problem, acute in some areas of our country. Scientists are only one group of people who should be involved. In fact, their role is even minor as most of the scientific solutions for solving these problems are already available. But what we may need are technicians at th village level to ensure that variou systems work without breakin down; tahsildars and village Panchayat officials to ensure that nev water supply systems are establishe well, and on time; social workers t persuade that no group of people i discriminated against from drawin water. We need the politicians to to lead such programmes, sustai and support them at various level so that they succeed.

This is how a society rejuvenate itself if it has to avoid other violen options. There is a weakness though in this type of a coheren option in that it demands participation from all: no one is free fron responsibility. It is easier to work with this option when all people are literate and able to see the benefits that may accrue. Unfortunately, our society still suffers from crippling illiteracy and reactionary beliefs and superstitions. We therefore have a handicap, though not really, as Mahatma Gandhi could mould the same society even when illiteracy was more rampant than it is today. How many things he did ! He led the country's fight for political freedom; fought against the Society's discrimination of Harijans, and also spearheaded an Indian technology, the Charkha. The country followed him because of the genuineness of the mission and his total honesty. He practised what he preached. We do not have a Mahatma today, and so we must all become followers of him; not blindly on issues that were important during his days, but on the ones that are relevant today. We must practise this on every issue, great or small. For instance, if we want our roads and streets clean, we must not throw litter, nor allow any one to dump garbage on the roads. We ourselves must not hesitate to clean our roads, as greatmen clean our souls. For these we need conviction and courage. ☐

Management Aptitude Test

The All India Management Association, an organisation deemed by the Central Government as a national body for the promotion of scientific management in the country, has launched an All India Management Aptitude Test (AIMAT) for candidates seeking admission to Post-graduate Programmes in Business Administration conducted by various Indian Universities/Institutions. Designed and conducted on the lines of GMAT, the test aims to fill the much felt need for a National Common Admission Test for admission to management programme with a network of test centres spread all over the country. The test is proposed to be validated over a period of time, resulting in a standardised test, designed with the support of expertise available in India and abroad.

The test is planned to be conducted twice a year i.e. in the months of April/May and November/December. Four Universities have already indicated their consent for joining the scheme. Approximately ten more Universities/Institutions are expected to join AIMAT from the next academic session.

With the introduction of a national test the candidates will have to appear only in one test, the scores of which will be valid for a number of Universities/Institutions. The test will be conducted at a National network of approximately 60 centres all over the country. The candidates would not have to travel much for appearing in the test. And all these facilities will cost the candidates an amount of Rs. 50/- only for appearing in the test.

AIMAT, being a standardised all India test, will ensure the quality intake of candidates to the participating Universities / Institutions. For this service they would not have to pay anything to AIMAT. They will, in fact, save in terms of effort and cost for designing and conducting the test and evaluation of the candidates. The All India Management Association will provide the section wise and aggregate scores of the candidates alongwith basic information like state domicile, SC/ST, defence persons, DT/NT, etc. to the participating University/Institution within 20-25 days of the conduct of the test.

The test will include subjects such as (1) Proficiency in English language, (2) Quantitative and numerical ability, (3) Ability for data analysis and interpretation, (4) Reasoning & general intelligence, and (5) Awareness of socio-economic environment. This will also include question on social intelligence, decision-making, etc.

Research Support for Punjabi

The UGC is reported to have recognised the Punjabi Department of Punjabi University for special assistance for advanced research in five major areas. The department will be provided with additional academic and secretarial staff, financial resources of about Rs. 12 lakh, technical equipment, building, a library and reprographical and computing equipment. The department has drawn up a Programme to open such areas of research as were not available earlier for want of funds.

According to Prof. Gurcharan Singh Arshi, Head of the Department, it is proposed to use the technique of scientific study in thrust areas like the preparation of referential material related to Persian and Sanskrit sources of Punjabi literature, Indian and Western poetics, folklore, comparative literature and literary appreciation. It has been decided to microfilm material relating to Punjabi language, art and culture.

New Institutes for Punjabi Varsity

The Punjabi University proposes to set up the Guru Kashi Institute of Advanced Study in Rural Development at Damdama Sahib in Bathinda district. It also proposes to open the Nawab Sher Khan Institute of Advanced Study in Urdu at Malerkotla by shifting the Department of Persian from the university campus. The Institute will conduct masters courses in Urdu and Persian and a diploma course in Arabic.

National Literacy Mission Seminar

The Department of Education, Madurai Kamaraj University recently organised a seminar on National Literacy Mission. Inaugurating the seminar, Dr. S. Krishnaswamy, Vice-Chancellor, pointed out the relationship between literacy level, infant mortality and longevity and the attempts being made in the University in eradicating illiteracy. He emphasised the need to establish a number of Adult Education centres to prevent the neo-literates becoming illiterates again.

At its three sessions, the seminar identified the problems in the conduct of literacy programmes, deliberated on specific cases of Literacy Programmes, and provided suggestions and solutions for the successful conduct of Literacy Programmes.

About 40 participants including Senior Principals of Arts, Science and Educational Colleges, Professors of University and Colleges, Adult Education Director, Co-ordinators, Project Officers, the Chief Educational Officer, Voluntary Organisation directors, attended the seminar and presented papers.

New Departments at AMU

The Aligarh Muslim University has set up new departments of electronic engineering, computer sciences, applied chemistry, applied physics and applied mathematics in the Faculty of Engineering and Technology.

A faculty of Life Sciences with recently established departments of biotechnology, wild life and ornithology has come up in the past three years. A faculty of Unani Medicine has been established with postgraduate departments of kulliyat and moalijat. In the Jawaharlal Nehru Medical College a department of dental surgery and a centre for cardiology and cardiovascular research has been set up.

A remote sensing application centre has been set up which carries out research and training in the field of remote sensing besides providing consultancy services.

US Grants for Delhi University

The United States Ambassador to India, Mr. John Gunther Dean, recently handed over grants totalling more than Rs. 21 lakh to Delhi University for two new Indo-US agricultural research projects. The initial cheques for the three-year collaborative research projects were presented to the University's Vice-Chancellor, Mr. Moonis Raza.

The grants are part of Rs. 2.7 crore annual programme of US-funded agricultural research in India. With this the total US contribution to the University's agriculture research has risen to more than Rs. 1 crore since the joint programme was set up in 1961.

The first grant will support an insect pest management research project which is aimed at helping farmers reduce the damage by locusts, khapra beetles, and other insects to stored what and other crops while the second grant studies the viability of cultivation and post-harvest technology for mushrooms as an income-generating activity.

Course on Family Savings and Investment

SNDT Women's University proposes to start a short term course on 'Family Savings and Investment' under the department of correspondence and distance education. The course aims at providing guidance on family budgeting, personal taxation, savings and various avenues available for investing savings. The course material including the printed lessons and audio cassettes would be offered in four languages, Hindi, English, Gujarati and Marathi. Further details can be obtained from University's Department of Correspondence and Distance Education.

Commercial University Limited

The Monopolies and Restrictive Trade Practices Commission (MRTPC) has restrained the Commercial University Limited of New Delhi, from having the word 'University' associated with its name in any manner whatsoever. It has also restrained them from granting or holding themselves as entitled to confer such degrees as B.Com., B.Com (Hons) and M.Com.

The Commercial University Ltd was also restrained from extolling the value of the degrees granted by it and the quality of the services rendered by it in the manner they have been doing.

The Commission has restrained M/s Kanchi Educational Institute of Madras, a private coaching institute affiliated to the Commercial University Ltd. from extolling the value of degrees granted by it in the manner in which they have been doing in their publicity material.

INSA Awards Announced

Indian National Science Academy (INSA) has honoured 10 scientists for their significant contributions in the field of science and technology. The awardees are : Prof M.S. Narasimhan of Tata Institute of Fundamental Research, Bombay, Dr. Dinesh Mohan, former Director, Central Building Research Institute, Roorkee, Dr. S K. Mukherjee, a retired soil scientist now settled in Calcutta, Prof A. Chakravorty of Indian Association for the Cultivation of Science, Calcutta, Dr. R.A. Mashelkar, National Chemical Laboratory, Pune, Prof. J.V. Narlikar of Tata Institute of Fundamental Research, Bombay, Prof. C.V. Subramanian, former Director, Centre for Advanced Study in Botany, University of Madras, Dr. P.K. Sethi, Emeritus Professor, Department of Orthopaedics, S.M.S. Medical College, Jaipur, Prof. Girjesh Govil of Tata Institute of Fundamental Research, Bombay and Dr Zora Singh, Department of Horticulture, Punjab Agricultural University, Ludhiana.

Bhopal Varsity Renamed

The Bhopal University is reported to have been renamed as "Barkatullah Khan University". The announcement to this effect was recently made by Chief Minister, Shri Arjun Singh while laying the foundation stone of a "freedom struggle museum" at the university.

Linking Academia and Industry

The Institute of Engineering and Technology, Patiala has introduced a five-year Co-operative Programme for Degree level education in Industrial Engineering. This Programme is operated through a sequence of academic terms, interspersed with two Work-Terms in the Industry. During a Work-Term the student is treated as an employee. This is intended to bridge the gap between theoretical and practical approach towards engineering, and to generate close interaction between academia and the Industry.

News from Agril. Varsities

Soil Zoology Colloquium

About 200 scientists from over 30 countries attended the 10th International Soil Zoology Colloquium held at Bangalore recently. Sponsored by the Indian Society of Soil Biology and Ecology, University of Agricultural Sciences, Bangalore, Indian Council of Agricultural Research and the Indian Union of Biological Sciences the 4-day colloquium was inaugurated by Mr. P. Venkatasubbaiah, Governor of Karnataka.

In his inaugural address, Mr. Venkatasubbaiah said India, with its great diversity in its soils, would possibly be the best laboratory for research in soil science.

Dr. N.S. Randhawa, Director General, ICAR, who presided, pointed out that a number of changes had been taking place in the micro environment of soils under different types of cropping systems. These changes which are in turn associated with changes in soil biology had not been adequately monitored. He hoped that the colloquium would consider these issues and develop strategies which would enable the practice of a sustainable agriculture.

He said pesticides like herbicides, granular insecticides and fungicides when applied with seeds left residues. Though these chemicals were used against specific pests they had an effect on other soil borne organisms. Dr. Randhawa said though rat burrows provided sub-soil aeration, they created problems during irrigation and caused damage to tuber crops and root system of various crops. He said multiplication rate of rodents and gergils were posing problems. The ICAR had taken up a research project on rodents.

Dr. K.E. Lee, Chairman, International Society of Soil Science, Commission-D, released a journal and a book entitled "Applied soil biology and ecology," while the State Agriculture Minister R.V. Deshpande released a souvenir brought out on the occasion.

News from UGC

INSAT-1B Programme of UGC

Between 12th September to 20th Sept., 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

12.9.88

"Agriculture & Biotechnology-I"
"Raw Materials—Jute"
"Symmetries in Nature"

13.9.88

"Issues in Higher Education"
"The 3rd Beat of the Sun"
"Energy Medicine"

14 9 88

"Phloem"
"Remote Sensing and Development"
"The Genius of Leonardo"

15.9.88

"Plants : All at Sea"
"Semi-conductors"

16.9.88

"Modelling Cranes"
"Timekeepers of Centuries-III"
"Animal in Focus-Saiga Antelope-II"

17.9.88

"Design & Environment VII Forms for Movement"
"The Strueture of Novel"
"The Art of Ikat"

18.9.88

No Telecast

19.9.88

"Agriculture & Biotechnology-II"
"Raw Materials-Uranium"
"The Story of a Grain of Salt-I"

20.9.88

"Benzyene & its Structure"
"New Directions to Learning"
"New Methods of Fracture Treatment-I"

News from Abroad

The Fifth Force of Nature ?

American scientists, it is reported, have mounting evidence of the possible existence of a previously-unknown force in nature that challenges Isaac Newton's famous 301-year-old law of gravity, the basic force that extends throughout the universe. Researchers propose that minute departures from standard gravity, detected in a series of sensitive tests performed in different part of the world over the past three years, may be manifestations of a widely debated fifth force of nature.

For years, physicists have thought that four fundamental forces existed in the univere; gravity which is responsible for the weight of matter and the motions of stars and planets, the electromagnetic force, which manifests itself as magnetism, electricity, light and other things, the strong force which holds the centres of atoms together, and the weak work force, which governs the production and decay of many atomic particles.

The Los Alamos National Laboratory recently announced results from an experiment involving precise measurement of gravity deep below the surface of the Greenland ice sheet. There, researchers discovered an apparent force that adds to gravity's attraction offering the best evidence so far that there is either another force at work in the universe or that the force of gravity itself is much more complex than previously believed. Scientists said the findings, if confirmed, could have a profound impact on modern science and man's understanding of the physical universe. Among the possible implications are a recalculation of the masses of planets and stars, as well as the mass and estimated age of the universe.

In an experiment conducted 400 years ago, Galileo found that when two objects of different weights were dropped from Italy's learning tower of Pisa, both hit the ground at the same time indicating that gravity accelerates all matter at the same rate.

Newton's equation, published in 1687 and now part of Einstein general theory of relativity, says that the force of the gravity is directly related to the distance and mass of the objects involved.

In the Greenland experiment scientists found the force of gravity to be about three per cent stronger than expected. The research team said that the extra force, or pull, was about 50 times weaker than gravity but that it enhanced gravity over short distances by providing extra attraction.

The exact range and source o

ASSOCIATION OF INDIAN UNIVERSITIES

CORRESPONDENCE COURSE IN EVALUATION METHODOLOGY & EXAMINATIONS

Applications are invited from college/university teachers for admission to Correspondence Courses in Evaluation Methodology and Examinations at Basic Level, Intermediate Level and Advanced Level/ Special Professional Course. The duration of each of the three courses is six months. A personal 'Contact Programme' for three days is planned for each of the three courses. Universities/Institutions sponsoring candidates can meet the registration/course fees from out of unassigned grants by UGC.

Request for prospectus and application form accompanied by a crossed Indian Postal Order for Rs. 10/- drawn in favour of the Secretary, Association of Indian Universities and a self addressed stamped envelope (Rs. 2/-) should reach the Director (Research), Association of Indian Universities, AIU House, 16 Kotla Marg, New Delhi 110002. Last date for receipt of applications is **15th Septembe** for non-sponsored and **26th September, 1988** for sponsored candidates.

e apparent new force remain nknown, they say. Data similar o that collected in Greenland will e gleaned from a deeper hole in ntarctica's ice sheet and from the eep Pacific ocean, an experiment now under way. These additional experiments may throw more light on the new force.

The results so far indicate that "there is an apparent violation of the inverse square law" of gravity. The standard Newtonian law of gravity, called the inverse square law, states that the gravitational attraction between two bodies decrease in relation to the square of the distance separating them. If the distance between the two objects is tripled, the gravitation attraction between them is one-ninth its former strength.

Tuition Tax on Australian Students

With the introduction of new scheme, Australia's 400,000 higher education students will pay a tuition tax of Aus $1,800 for each year of study from the start of 1989. But students who pay the charge as an "upfront" fee will be eligible for a discount of about 15 per cent.

Under the new scheme, there will be a fixed charge of Aus $1,800 a year whatever course is taken and a sliding scale tax levy will be imposed. Graduates or those who have left higher education for work will begin repaying a portion of the cost of their education when they reach an income of Aus $22,000 a year. The levy will start at 1 per cent and rise to 2 per cent at an income of Aus $25,000 a year and to 3 per cent when the salary level reaches Aus $35,000 per annum.

Mr Dawkins, minister for employment, education and training, has said that all income from the new tax charges will be used solely for funding student places.

However, the students and academic groups have opposed the tax levy scheme, claiming that the introduction of the new charges will defeat the government's plans to attract more students into higher education. They also claim that potential students, particularly those from disadvantaged backgrounds, will not enrol in universities or colleges of advanced education if they are going to be more heavily taxed as a result.

AIU News

Inter-University Youth Festivals 1988-89

The Inter-University Youth Festivals, financially, supported by the Department of Youth Affairs and Sports, Govt. of India and conducted under its scheme of 'Promotion of National Integration Camps' are organised by the Association of Indian Universities (AIU) every year. The festivals generate feelings of national and emotional integration by bringing about cultural exchange of university youth from diverse regions of our vast country.

As in previous years, the festivals will be held on zonal basis at different university centres during October-November, 1988 followed by the National Festival to be organised during January-February, 1989 at the Indian School of Mines, Dhanbad. The AIU Cultural Committee has approved the following time table for holding the Festivals :

Zone	Host University	Dates
East	Sambalpur University, Sambalpur	Oct. 12-15, 1988
South	Bharathidasan University, Tiruchirapalli	Oct. 27-30, 1988
North	C.S. Azad Univ. of Agril. & Technology, Kanpur	Nov. 13-16, 1988
West	Devi Ahilya Vishwavidyalaya, Indore	Nov. 20-23, 1988
National	Indian School of Mines, Dhanbad	Jan. 31 to Feb. 4, 1989

One Act Play, Skits, Mime, Group Song (Indian) and Fine Arts are the events proposed to be included.

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
September 26-28, 1988	**International Conference on Welding Technology in Developing Countries**	**To provide an opportunity to scientists and technologists from developing and advanced countries to share their experiences in the area of Welding Technology.**	**University of Roorkee, Roorkee.**	**Prof. P.C. Gupta, Organising Secretary, International Conference on Welding Technology in Developing Countries, Department of Mech. & Ind. Engg., University of Roorkee, Roorkee-247667**
October 27-29, 1988	National Seminar on Statistics in Medicine, Health and Nutrition.	To discuss Data-Base and Analysis in Health and Nutrition—Present and Future.	Department of Statistics, National Institute of Nutrition, Hyderabad.	Dr. K. Visweswara Rao, Organising Secretary, National Seminar on Statistics in Medicine, Health and Nutrition, Department of Statistics, National Institute of Nutrition, Indian Council of Medical Research, Jamia Osmania, Hyderabad-500 007
October 31-Nov. 4 1988	Short Term Course on Remote Sensing and Geo-Data Base with Socio Economic Information	To expose the concept of Data Base Approach towards handling and analysing the Remotely Sensed and Land-based Information.	Centre of Studies in Resources Engineering, IIT, Bombay.	Dr. T.V. Pavate Chief Project Engineer, Training Extension and Project Cell, RSD-VI, CSRE, IIT, Bombay-400076
December 13-17, 1988	**International Seminar on Education and Training in Water Resources in Developing countries.**	**To assess the requirements of manpower, education and training in Water Resources Sector upto the year 2025 in the developing countries.**	**Central Board of Irrigation and Power, New Delhi.**	**Mr. C.V.J. Varma, Organising Secretary, International Seminar on Education and Training, Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi-110021**
December 15-17, 1988	National Conference on Fluid Mechanics and Fluid Power	To provide a forum for exchange of information on topics in fluid mechanics and design, research and development activities in areas like power generation, aerodynamics, fluidics, biomechanics, etc.	Harcourt Butler Technological Institute, Kanpur.	Dr. N.L. Kachhara, Organising Secretary, 16th National Conference on Fluid Mechanics and Fluid Power, Mechanical Engineering Department, Harcourt Butler Technological Institute, Kanpur-208002

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

CURRENT DOCUMENTATION IN EDUCATION

A List of Select Articles culled from periodicals received in the AIU Library during August, 1988

EDUCATIONAL PHILOSOPHY

Kirpal, Prem. Let's build bridges of understanding. *Yojana* 32(14-15), 1988, 53-6, 81.

Kurien, P.J. Why this phenomenon of fundamentalism ? *Yojana* 32(14-15), 1988, 75-7,90.

EDUCATIONAL PSYCHOLOGY

Posner, Barry and Kouzes, James M. Development and validation of the leadership practices inventory. *Ednl Psy Measurement* 48(2), 1988, 483-96.

Singh, N.P. A study of frustration in relation to sense of responsibility amongst youth. *Prog Edn* LXIII(1), 1988, 16-21, 15.

Tuckman, Bruce W. The scaling of mood. *Ednl Psy Measurement* 48(2), 1988, 419-27.

EDUCATIONAL POLICY & PLANNING

IMPLEMENTATION REPORT on the National Policy on Education, 1986. *New Frontiers Edn* 18(2), 1988, 1-56.

EDUCATIONAL ADMINISTRATION

Blase, Joseph J. The politics of favoritism : A qualitative analysis of the teachers' perspective. *Ednl Admn Q* 24(2), 1988, 152-77.

Shatrugna, M. Blow to University autonomy. *Eco & Pol Weekly* 23(32), 1988, 1615.

Srivastava, Ranjana. Educational Management : Concerns for the future. *New Frontiers Edn* 18(2), 1988, 97-100.

CURRICULUM

Barnabas, Manorama. Women's studies in India : Options and constraints. *New Frontiers Edn* 18(2), 1988, 57-67.

TEACHERS & TEACHING

McClure, Maureen W and others. Teaching career paths and teacher education reforms. *Ednl Admn Q* 24(2), 1988, 200-21.

Parida, Akshya Kumar. Making teacher education purposeful. *Edn Q* 39(4), 1987, 1-3.

Ranga, N. G. Education should help strengthen secularism. *Yojana* 32(14-15), 1988, 25-28,88.

Singh, R. P. Colonialism and status of native languages : A case study of India. *Edn Q* 39(4), 1987, 15-19.

EDUCATIONAL TECHNOLOGY

Gray, Peter J. The new generation of computers. *Eval Practice* 9(2), 1988, 53-60.

Nishinosono, Haruo. Informatics in general education : The Japanese plan. *Prospects* XVII (4), 1987, 539-546.

Oteiza, M. Fidel. Informatics and education : The situation in Latin America. *Prospects* XVII(4), 1987, 547-552.

Shacham, Mordechai and Cutlip, Michael B. Authoring systems for laboratory experiment simulators. *Comput Edn* 12(2), 1988, 277-82.

EDUCATIONAL EVALUATION

Arnold, Mit and Craft, Nikki. A survey of program evaluation in university affiliated programs. *Eval Practice* 9(2), 1988, 31-5.

Patton, Michael Quinn. The evaluator's responsibility for utilization. *Eval Practice* 9(2), 1988, 5-24.

Rallis, Sharon F. Evaluating an old friend : One evaluator's view of the changing role of program evaluator in chapter one. *Eval Practice* 9(2), 1988, 25-30.

SCIENCE EDUCATION

Emiya Dienye, N. Kuhn's paradigm shift and science education. *New Frontiers Edn* 18(2), 1988, 101-6.

VOCATIONAL EDUCATION

Sidhardhan, G. Entrepreneurship education : Its role in industrial development in a traditional society. *New Frontiers Edn* 18(2), 1981, 118-22.

ADULT EDUCATION

ASIA-PACIFIC Programme of Education for All (APPEAL) : A regional programme. *Edn Asia & Pacific* (24), 1987, 1-14.

Burke, Richard C. Getting the mixture right : Nonforr education through community radio in the Bolivian Al plano. *Convergence* 20(2), 1987, 69-81.

Das, Lakshahira. Integration of adult education in context of community education. *Edn Q* 39(4), 1987, 23-2

Dutta, S. C. Development learning : The goal of ac education. *Indian Jr Ad Edn* 49(1), 1988, 5-10.

Jarvis, Peter, Paulo Freire : Educationalist of a revo tionary Christian Movement. *Convergence*, 20(2), 1987, 30-

Kraevskii, Volodar V. The Soviet Union's experience the elimination of adult literacy. *Convergence* 20(2), 19 20-25,

Shah, S. Y. Some aspects of Indian adult educatio S.C. Dutta's ideas and involvement in the promotion of ad education in India. *Indian Jr Ad Edn* 49(1), 1988, 55-8.

DISTANCE EDUCATION

Dhanasekaran, S. Audio-visual aids in distance educatio *New Frontiers Edn* 18(2), 1988, 113-7.

Mukhopadhyay, Durgadas. Emergence of television as tool of distance education in India. *Edn Q* 39(4), 1987 11-1

COMPARATIVE EDUCATION

EDUCATIONAL POLICIES, plans and perspective Review of three country experiences. *Edn Asia and Paci* (24), 1987, 15-42.

COUNTRY STUDIES

Iheoma, E.O. Discipline, punishment and moral educa tion in Nigeria. *Prog Edn* LXIII(1), 1988, 2-9,15.

THESES OF THE MONTH

A List of Doctoral Theses accepted by Indian Universities.

BIOLOGICAL SCIENCES

Marine Biology

1. Philip, Samuel P. *Biochemical genetics of selected commercially important panaeid prawns.* CUST. Dr. M J George, Joint Director (Retd.), 120 Girinagar, Cochin.

Biochemistry

1. Ahuja, Sneh Lata. *Studies on environmental pollutants as carcinogens and mechanism of carcino-genesis at molecular level.* Panjab.

2. Anil Prakash. *Bio-effectiveness and compatibility of some carbamate insecticides in combination with other pesticides and synergists.* Bhopal. Dr. O.S. Shrivastava, Prof and Head, Department of Bioscience, Bhopal University, Bhopal and Dr. (Mrs) S. D. Belsare, Reader, Department of Bioscience, Bhopal University, Bhopal.

3. Jambhulkar, Vinay Sitaram. *Microbial production of fat using industrial and agricultural waste.* Nagpur. Dr. K. Shankhapal, Department of Biochemistry and Microbi logy, Nagpur University, Nagpur.

4. Kayastha, Arvind Mohan. *Studies in phosphoenolp ruvate phosphatase from germinating mung beans, Vig radiata.* BHU. Prof. O.P. Malhotra, Department of Bi chemistry, Banaras Hindu University, Varanasi.

5. Krishna Murthy, K.G. *Biochemical characterizati on the bacteriophage 9 NA : A virulent phage of Salmonel typhimurium.* BHU. Prof. M. Chakravorty, Department Biochemistry, Banaras Hindu University, Varanasi.

6. Monjurul Morshed, Khandoker. *Studies in enviro mental biochemistry : Some aspects of intestinal functions a membrane characteristics under propane-1,2-diolinduced xen biotic stress in male rats.* Panjab.

7. Sharma, Vijay Kumar. *Studies on pesticidal properti of certain plants.* Bhopal. Dr. B.P. Shrivastava, Manag (R&D), U.C.I. Ltd., Bhopal and Dr. D.K. Belsare, Pro Department of Bioscience, Bhopal University, Bhopal.

8. Swaminathan, Kanchan. *Studies on biodegradation of aromatic compounds in aqueous environment under anaerobic conditions.* Nagpur. Dr. P.V.R. Subrahmanyam, National Environmental Engineering Research Institute, Nagpur.

Botany

1. Chandrashekhar, K.R. *Some aspects of waterborne fungi and their enzymes.* Mangalore. Dr. K.M. Kaveriappa, Prof., Department of Applied Botany, Mangalore University, Mangalore.

2. Chaudhuri, Basanta Kumar. *Physiological and biochemical studies on some members of the family gymnoascaceae.* Calcutta.

3. Dubey, Santosh Kumar. *Effects of certain heavy metals on a nitrogen fixing cyanobacterium, Anabeena doliolum.* BHU. Dr. L.C. Rai.

4. Gupta, Bhupender. *Structure, net primary productivity and nutrient cycling in grazed and ungrazed grassland ecosystems at Shardaghat, Simla.* HP.

5. Hanumantha Rao, P. *Radiation-induced polygenic variability with notes on morphogenetics, cytogenetics and electrophoretic patterns of some induced mutants in green gram, Vigna radiata L. Wilczek.* Nagarjuna.

6. Mishra, Krishna Kishor. *Biochemical genetics of alcohol dehydrogenase in brassica and its allies.* Delhi.

7. Muhammad Nurul Amin. *In vitro clonal propagation of guaya, Psidium guajava L. and jack fruit, Artocarpus heterophyllus Lamk.* BHU. Dr. V.S. Jaiswal, Reader, Department of Botany, Banaras Hindu University, Varanasi.

8. Pal, Dulalchandra. *Ethnobotany of Midnapore District, West Bengal (India).* Calcutta.

9. Pathkhede, Arun Uddhaorao. *Taxonomic and physiological studies of certain deuteromycetes.* Amravati. Dr. J.L. Shreemali, Principal, Brijlal Biyani Science College, Amravati.

10. Sagar Kumar, Alla. *Ecophysiological studies on coastal vegetation of Saurashtra Coast.* Bhavnagar. Dr. A.J. Joshi.

11. Singh, Baban Prasad. *Biosystematic study of some common weeds occurring in North Bihar.* Magadh.

12. Singh, Harsh Vardhan. *Physiological and cytological investigations in some green algae.* BHU. Dr. B. R. Chaudhary.

13. Tomar, Chet Singh. *Influence of different levels of calcium on the growth and metabolic activities of apple seedlings in solution culture.* HP.

Zoology

1. Ayyappan, S. *Investigations on the limnology and microbial ecology of a lentic habitat.* Bangalore. Dr. Katre Shakuntala, Prof., Department of Zoology, Bangalore University, Bangalore and Dr. S.P. Ayyar, Scientist S-3, Central Inland Fisheries Research Institute, Malleswaram, Bangalore.

2. Basalingappa, Magadum Shashikant. *Studies on the effect of some chemicals and hormones on the gonads and life cycle of the silkworm, Bombyx Mori L.* Karnatak. Dr. M.A. Hooli, Reader, Department of Zoology, Karnatak University, Dharwad.

3. Bhupinder Singh. *Investigations on the anti-inflammatory activity of polygonum glabrum, Willd. and Echinops echinatus, Roxb.* BHU. Prof. S.S. Gambhir, Department of Pharmacology, Banaras Hindu University, Varanasi.

4. Chakraborti, Munmun. *Effect of Erythropoietin on some of the functional aspects of rat erythrocytemembrane.* Calcutta.

5. Chaudhary, Sangeeta. *Studies on biochemical composition of some common nematodes.* Meerut. Dr. K.C. Pandey, Head, Department of Zoology, Meerut University, Meerut.

6. Chaudhuri, Anathbandhu. *Physiological studies on the thyroid hormone actions in silkworms, Bombyx mori L.* Calcutta.

7. Ghosh, Ranjit Kumar. *Studies on platyhelminths of reptiles.* Meerut. Dr. K.C. Pandey, Head, Department of Zoology, Meerut University, Meerut and Dr. C.B. Srivastava, Zoological Survey of India, 8 Lindsay Street, Calcutta.

8. Jha, Bimalendu Shekhar. *Effects of lead nitrate on certain organs of an air-breathing teleost, Channa punctatus (Bloch).* Mithila. Dr. S. Pandey, Prof. and Head, Department of Zoology, L N. Mithila University, Darbhanga.

9. Kasaiah, V.V. *Taxonomy and ecology of zooplankton of tropical freshwater fish ponds at Vuyyur, Andhra Pradesh, India with special reference io copepods, Crustacea.* Nagarjuna.

10. Mahapatra, Suman Kumar. *Study on the bionomics of some species of Indian aphididae, Homoptera.* Calcutta.

11. Rajput, Bahadursingh. *Physiology and biochemistry of haustoria development in Cuscuta.* Devi Ahilya.

12. Ranganathan, T.K. *Studies on the ascidians of South India.* Madurai.

13. Ravi Rani. *Studies on the mechanism of action of endogenous kinins on the motor activity of rat stomach.* BHU. Dr. K.S. Rao.

14. Sarojamma, R. *Studies on reproduction and neurosecretion in the milipede, Phyllogonostreptus nigrolabiatus.* Bangalore Dr. S. Krishan, Department of Zoology, Jnana Bharathi, Bangalore University, Bangalore.

15. Sekhar, Penmetcha Satya Raja. *Captive propagation and management of an endangered sea turtle, Lepidochelys olivacea (Eschscholtz) of the Northern Andhra Coast.* Andhra.

16. Sharma, Som Datta. *Study of toxicobiochemical changes in albino rat after the administration of non-permitted edible dyes.* Meerut. Dr. K.A. Goel, Department of Zoology, DAV College Muzaffarnagar.

17. Sneh Lata. *Studies on morphology, gametogenesis and egg-shell formation of some cestodes.* Meerut. Dr. K. C. Pandey, Head, Department of Zoology, Meerut University, Meerut.

18. Upadhyay, Sachchida Nand. *Evaluation of piracetam: A nootropic agent, with reference to cognitive processes and*

drug interactions. BHU. Dr. S.K. Bhattacharya, Reader, Department of Pharmacology, Banaras Hindu University, Varanasi.

Medical Sciences

1. Chandra T. *A biochemical approach to certain medicinal plants for inflammation and liver injury.* Madurai.

2. Gaikwad, Naresh Janardan. *Synthesis of some Mannich Reaction products of pseudothiohydantoins and parabanic acids as anticonvulsants.* Nagpur. Dr. V.V. Parashar, Department of Pharmaceutical Sciences, Nagpur University, Nagpur.

3. Khadgapathi, Podile. *Development of new analytical methods for the determination of anteasthmatic and other drugs in pharmaceutical dosage forms.* Andhra.

4. Kunchandy, Joseph. *Pharmacological modulation of benzodiazepine receptors activation and its influence on the action of some drugs.* Panjab.

5. Mumtaz Ahmad, Irfanur Rahman. *Certain biochemical alterations of human polymorphonuclear leukocytes in hypertension.* Nagpur. Dr. N. Nath, Department of Biochemistry, Nagpur University, Nagpur.

6. Murthy, Radha. *Studies on medicinal plants useful in Diabetes mellitus.* Delhi.

7. Pandya, Mira A. *Asrigdar mein madyntika evam durva ka prabhav.* Gujarat Ayurved. Prof. M.S. Shastry, Department of Basic Principals, Gujarat Ayurved University, Jamnagar.

8. Satya Prasad, Godavathi Bhogendra Krishna. *Immunological studies in Baneroitian filariasis.* Nagpur. Prof. B. C. Harinath, Department of Biochemistry. M.O. Institute of Medical Sciences, Sewagram.

9. Wangoo, Arun. *A study of the mechanism of immunosuppression in P. Berghei infected mice.* PGIMER, Chandigarh.

Agriculture

1. Dash, Sudama Charan. *Studies on sheath blight of rice caused by Thanatephorus cucumeris (Frank) Donk.* OUAT. Dr. N.N. Mohanty, Prof. (Retd), Department of Plant Pathology, Orissa University of Agriculture and Technology, Bhubaneswar.

2. Dhaka, Tejveer Singh. *A comparative study of combining ability and gene effects using diallel triallel analysis in pea, Pisum aestivum L.* Meerut. Dr. S.B. Singh, Reade, Department of Agricultural Botany, Meerut University Meerut.

3. Dwivedi, Rajani Kant. *Ecological investigations on wheat and paddy crops with special reference to sewage irrigation.* BHU. Dr. B.D. Tripathi.

4. Goyal, Narinder Kumar. *Dynamics of cadmium in soil-plant system.* HAU.

5. Krishna Kumar. *Studies on genetic divergence and phenotypic stability of important varieties of wheat, Triticum aestivum L.* Meerut. Dr. B. S. Chaudhary, Head, Department of Agricultural Botany, J.V. College, Baraut.

6. Pandey, Ram Alakh. *Relationship between economic characters and their components in seedlings and clonal population in sugarcane.* Rajendra Agrl.

7. Rai, Prakash Chandra. *Studies on some components of pest management against thrips and aphids on chilli crop.* BHU. Prof. Lallan Rai, Department of Entomology and Agricultural Zoology, Banaras Hindu University, Varanasi.

8. Ravi Kant. *Selection response under full sib mating and selfing series derived from F_2 and full sib populations through single and descent in barley.* PAU.

9. Singh, Birbal. *Studies on manganese in soils of Muzaffarnagar District.* Meerut. Dr. Mahabir Singh, Head, Department of Agricultural Botany, A.S. College, Lakhaoti and Dr. Vinay Singh, Lecturer, Department of Agricultural Chemistry, RBS College, Bichpuri, Agra.

10. Singh, Indra Sen. *Generation means analysis and selection in spring and kharif planted Mungbean, Vigna radiata L. Wilczek.* BHU. Dr. B.D. Singh, Reader, Department of Genetics and Plant Breeding, Banaras Hindu University, Varanasi.

11. Singh, Jai Pal. *Genetic analysis of oil yield and its component characters in Brassica napus L.* Meerut. Dr. B. S. Chaudhary, Head, Department of Agricultural Botany, J.V. College, Baraut and Dr. I.J. Anand, Head, (Oilseeds) Division of Genetics, Indian Agricultural Research Institute, New Delhi.

12. Surendra Singh. *Studies on the effect of pyrites as a cofertilizer with special reference to oilseed crops.* BHU. Dr. Bharat Singh, Prof. and Head, Department of Soil Science and Agricultural Chemistry, Banaras Hindu University, Varanasi.

Animal Husbandry

1. Chandel, Rajpal Singh. *Effect of winter packing on the performance of the honeybee, Apis mellifera L. in mid hills of Himachal Pradesh.* YS Parmar. Dr. R.C. Mishra, Project Co-ordinator, All India Co-ordinated Honeybee Management Project, Haryana Agricultural University, Hisar.

2. Satpal Singh. *Insect pollination studies on almond.* YS Parmar. Dr. R.C. Mishra, Project Co-ordinator, All Iadia Co-ordinated Project on Honey bee, Haryana Agricultural University, Hisar.

3. Singh, Ram Naresh. *Biometrical genetic studies on a Tharparkar herd.* Rajendra Agrl.

4. Singh, Sarobar Sharan. *Evaluation of additive and non-additive gene effects for some economic traits from strain and breed crosses in poultry.* Birsa Agrl.

KHAJA EDUCATION SOCIETY

RAUZA BUZURG, GULBARGA

No : KES/KBNCE/APT/1988-89 Dated : 21.8.1988

WANTED

Applications are invited from the eligible candidates for the following posts in Khaja Banda Nawaz College of Engineering, Gulbarga (Karnataka).

Sl. No.	Name of Post.	No. of Post.	Essential qualification required.
(1)	Professor in Civil Engineering	01	M.E. in the subject with 7 years experience.
(2)	Asstt. Professor in Civil Engineering	02	M.E. in the subject with 5 years experience.
(3)	Lecturer in Civil Engineering	03	M.E. in the subject.
(4)	Professor in Instrumentation	01	M.E. in the subject with 7 years experience.
(5)	Asstt. Professor in Instrumentation	03	M.E. in the subject with 5 years experience.
(6)	Lecturer in Instrumentation	03	B.E. in the subject with 1st class OR M.Sc. in Instrumentation.
(7)	Lecturer in Physics	01	M.Sc. in the subject with 1st class.
(8)	Professor in Computer Science	01	M.E. in the subject with 7 years experience.
(9)	Asstt. Professor in Computer Science	02	M.E. in the subject with 5 years experience.
(10)	Lecturer in Computer Science	03	B.E. in the subject.
(11)	Professor in Electronics & Commn,	01	M.E. in the subject with 7 years experience.
(12)	Asstt. Professor in Electronics & Commn.	02	M.E. in the subject with 5 years experience.
(13)	Lecturer in Electronics & Commn.	03	B.E. in the subject with Ist class or M.E.

Salary will be paid as per A.I.C.T.E. pay scales. Salary is negotiable according to merit & experience. Retired persons also can apply. Teaching experience in case of Asstt. Prof. & Professor can be relaxed if the performance in the interview is found satisfactory. Applications with full bio-data and copies of educational certificates should be addressed to the Hon. Secretary, Khaja Education Society, Rauza Buzurg, Gulbarga-585104 (Karnataka State) so as to reach this office within **15 days** from the date of publication.

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(A Govt. of India Undertaking)

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NEEDS

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Applications in the prescribed from (to be obtained from the office of the Corporation) along with attested copies of certificates in support of age, qualification and experience, etc. with Demand Draft of Rs. 10/- drawn in favour of Educational Consultants India Limited should reach the Administrative Officer, Educational Consultants India Limited, A-1/111, Safdarjung Enclave, New Delhi-110029 by **30th September, 1988**. Requests for application forms accompanied by self-addressed envelope 9" x 4" size and stamped for one Rupee will be entertained upto **20th September, 1988**. Candidates belonging to SC/ST community need not pay any fee.

CLASSIFIED ADVERTISEMENTS

Annamalai University

RAJAH MUTHIAH INSTITUTE OF HEALTH SCIENCES

Notification No. 2(S)/88

Applications are invited in the prescribed form for the following posts in the Rajah Muthiah Medical College of this University :

Sl. No.	Name of the Post	No. of Post
1.	Professor of Pathology	1
2.	Professor of Obstetrics and Gynaecology	1
3.	Professor of T.B. and Chest Diseases	1
4.	Professor of Anaesthesiology	1
5.	Professor of Psychiatry	1
6.	Professor of Social and Preventive Medicine	1
7.	Professor of Radiology	1
8.	Reader in Pharmacology	2
9.	Reader in Pathology	3
10.	Reader in Microbiology	2
11.	Reader in Forensic Medicine	1
12.	Reader in Radiology	1
13.	Reader in Anaesthesiology	1
14.	Reader in Social and Preventive Medicine	2
15.	Reader in Bio-Chemistry	1
16.	Lecturer in Bio-Chemistry	1
17.	Lecturer in Pharmacology	2
18.	Lecturer in Pathology	2
19.	Lecturer in Anatomy	1
20.	Lecturer in Forensic Medicine	1
21.	Lecturer in Social and Preventive Medicine	2
22.	Lecturer in Rural Health Centre	1
23.	Lecturer in Urban Health Centre	1
24.	Lecturer in Microbiology	2
25.	Lecturer-cum-Epidemiologist	2
26.	Lecturer in Medicine	2
27.	Lecturer in Obstetrics and Gynaecology	2
28.	Lecturer in Dermatology	1
29.	Lecturer in Radiology	1
30.	Lecturer in Casualty Medical Unit	2
31.	Medical Officer-cum-Lecturer in Blood Bank	1
32.	Lecturer in Anaesthesiology	1
33.	Antenatal Medical Officer-cum-Lecturer	1
34.	Maternity and Child Welfare Officer-cum-Lecturer	1
35.	Clinical Pathologist (Lecturer Grade)	2

QUALIFICATIONS

Professor

Applicant should have 4 years of teaching experience as Reader in a Medical College, besides the prescribed educational qualification.

Reader

Applicant should have 5 years of teaching experience as Lecturer in a Medical College besides the prescribed educational qualification.

EDUCATIONAL QUALIFICATION

For Sl. No. 1 : M.D. (Pathology)/ M.D. (Pathology & Bacteriology)/M.D. (Pathology with Bacteriology) / Ph.D. (Pathology)/D.Sc. (Pathology).

For Sl. No. 2 : M.D. (Obstetrics & Gynaecology) / M.S. (Obstetrics & Gynaecology) / M.D. (Mid. & Gynae.) M.S. (Mid. & Gynae.) M.O.

For Sl. No. 3 : M.D. (Tuberculosis)/ M.D. in Medicine with T.D.D., D.T.D. or D.T.C.D.

For Sl. No. 4 : M.D. (Anaesthesiology)/M.S. (Anaesthesiology)

For Sl. No. 5 : M.D. (Psychiatry/ M.D. (Psychological Medicine)/M.D. in Medicine with Diploma in Psychological Medicine.

For Sl. No. 6 : M.D. (Social & Preventive Medicine) / (Community-Medicine)/M.D. (Medicine) with D.P.H.

For Sl. No. 7 : M.D./M.S. (Radiology)

For Sl. No. 8 : M.D. (Pharmacology)/ M.D. (Pharmacology & Therapeutics)/ M.B.B.S. with M.Sc. (Pharmacology)/ Ph.D. (Medical Pharmacology) D.Sc. (Medical Pharmacology)

For Sl. No. 9 : M.D. (Pathology)/ M.D. (Pathology & Bacteriology)/ M.D. (Pathology with Bacteriology)/ Ph.D. (Pathology) D.Sc. (Pathology)

For Sl. No. 10 : M.D. (Bacteriology)/ M.D. (Microbiology)/M.D. (Bacteriology with Pathology) M.D. (Pathology & Bacteriology)/M.B.B.S. with M.Sc. (Medical Bacteriology)/M.Sc. (Medical Microbiology)/Ph.D. (Medical Bacteriology)/Ph.D. (Medical Microbiology)/ D.Sc. (Medical Bacteriology) D.Sc. (Medical Microbiology).

For Sl. No. 11 : M.D. (Forensic Medicine)

For Sl. No. 12 : M.D./M.S. (Radiology)

For Sl. No. 13 : M.D. (Anaesthesiology)/M.S. (Anaesthesiology)

For Sl. No. 14 : M.D. (Social & Preventive Medicine)/ (Community Medicine)/M.D. (Medicine) with D.P.H.

For Sl. Nos. 15 & 16 : M.D. (Bio-Chemistry)/M.B.B.S. with M.Sc. (Medical Bio-Chemistry)/Ph.D. (Medical Bio-Chemistry) D.Sc. (Medical Bio-Chemistry)

For Sl. No. 17 : M.D. (Pharmacology)/M.D. (Pharmacology & Therapeutics)/M.B.B.S. with M.Sc. (Pharmacology)/Ph.D. (Medical Pharmacology)/ D.Sc. (Medical Pharmacology)

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For Sl. No. 19 : M.S. (Anatomy)/ M.B.B.S. with M.Sc. (Anatomy)/Ph.D. (Medical Anatomy)/D.Sc. (Medical Anatomy)

For Sl. No. 20 : M.D. (Forensic Medicine)

For Sl Nos. 21 & 22 & 23 : M.D. (Social and Preventive Medicine)/ (Community Medicine)/M.D. (Medicine) with D.P.H.

For Sl. No. 24 : M.D. (Bacteriology)/ M.D. (Microbiology)/M.D. (Bacteriology with Pathology)/M.D. (Pathology & Bacteriology)/M.B.B.S. with M.Sc. (Medical Bacteriology)/M.Sc. (Medical Microbiology)/Ph.D. (Medical Bacteriology)/Ph.D. (Medical Microbiology)/ D.Sc. (Medical Bacteriology)/D.Sc. (Medical Microbiology)

For Sl. No. 25 : M.B.B.S., D.P.H.

For Sl. No. 26 : M.D. (Medicine)/ M.D. (General Medicine)

For Sl. No. 27 : M.D. (Obstetrics & Gynaecology)/M.S. (Obstetrics & Gynaecology)/M.D. (Mid. & Gynaecology)/ M.S. (Mid. & Gynaecology)/M.O.

For Sl. No. 28 : M.D. (Dermatology)/ M.D. (Dermatology & Veneorelogy)/ M.D. (Medicine) with Diploma in Dermatology).

For Sl. No. 29 : M.D./M.S. (Radiology)

For Sl. No. 30 : M.B. B.S. with M.D./ M.S.

For Sl. No. 31 : M.B.B.S. with D.C.P. (Desirable : Experience in Blood Bank for 2 years)

For Sl. No. 32 : M.D. (Anaesthesiology)/M.S. (Anaesthesiology)

For Sl. No. 33 : M.B.B.S. with D.G.O. (Desirable : 2 years experience in Maternity Hospital)

For Sl. No. 34 : M.B.B.S. with D.C.H. (Desirable : I year experience in a Neonatal Unit or Children's Hospital)

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Scale of Pay : Pending revision in the light of the recommendations of the University Grants Commission.

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Candidates invited for interview for the posts of Professors and Readers will be paid a single second class to and fro railway fare.

Those who are in service should route their applications through proper channel.

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ANNA UNIVERSITY

MADRAS-600 025

Advertisement No. 8567/L3/88

Dated : 19-8-1988

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I. Department of Physics	
1. Reader (Crystal Growth)	1
2. Assistant Professor (Physics)	1
3. Lecturer (Crystal Growth)	3
4. Lecturer (Physics)	3
II. Department of Civil Engineering	
1. Assistant Professor (Remote Sensing)	1
2. Assistant Professor (Survey)	1
3. Lecturer (Civil)	4
III. Division of Mining Engineering	
1. Lecturer (Mechanical)	1
2. Lecturer (Electrical)	1
IV. Department of Automobile Engineering	
1. Lecturer (Thermal Sciences/ Fluid Mechanic exposure/ Machine Design)	2
V. Division of Science	
1. Lecturer in Metallurgy	1
VI. Curriculum and Educational Media Development Centre	
1. Co-ordinator (AVRC)	1

Scale of Pay: 1. Assistant Professor/Reader/Co-ordinator Rs. 1200-50-1300-60-1900.

2. Lecturer : Rs. 700-40-1100-50-1600

VII. **Centre for Bio-technology**

1. Reader—2

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Request for application forms, details of qualifications/field of specialisation prescribed and other particulars will be entertained upto 19-9-88.

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Note: The candidates will be eligible for UGC/AICTE scale of pay as and when the revision is made.

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UNIVERSITY OF MADRAS

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Sl. No.	Department	Prof.	Reader	Lecturer
1.	Economics	2	1	2
2.	Econometrics	—	—	2
3.	Criminology	—	—	1
4.	Journalism/Communication	—	1	—
5.	Area Studies	1	—	—
6.	Philosophy	1	1	—
7.	Education	1	—	—
8.	Nuclear Physics	—	—	2
9.	Organic Chemistry	—	2	1
10.	Bio-Chemistry	1	—	—
11.	Applied Geology	—	—	1
12.	Tamil Literature	1	*1	—
13.	Telugu	1	—	—
14.	Kannada	—	—	1
15.	Arabic, Persian and Urdu	—	—	1
16.	English	—	—	1
17.	Centre for Anna Studies	—	—	1
18.	Saiva Siddhanta	—	—	1
19.	Jainology	—	1	—
20.	Islamic Studies	1	1	1
21.	Zoology, P.G. Centre, Vellore	—	1	2
22.	Economics, — do —	1	1	2
23.	Chemistry, — do —	1	1	2
24.	Defence Studies	1	—	—
25.	Management Studies	3	1	5
26.	CAS in Botany	1	2	1
27.	Mathematics	2	—	2
28.	Zoology	1	2	1
29.	Anthropology	1	—	—
30.	Library and Information Science	—	—	1
31.	One post of Librarian, Guindy Campus Library.			
32.	One post of Deputy Registrar SC/ST Special Cell.			
33.	One post of Project Officer.			

* Those who have already applied for the post of One Reader in Tamil Literature has again to apply based on this advertisement.

Computer Centre :

Head of the Computer Centre — One Post.
Console Operator — One Post.
Applications Programmer — Two Posts.

Scale of Pay

Professor : Rs. 1500-60-1800-100-2000-125/2-2500/-
Reader : Rs. 1200-50-1300-60-1900/-
Lecturer : Rs. 700-40-1100-50-1600/-
Project Officer : Rs. 700-40-1100-50-1600/-
Deputy Registrar : Rs. 1910-110-2900/-
Librarian : Rs. 1200-50-1300-60-1900/-
Applications Programmer : Rs. 1340-75-1715-90-2435/-
Console Operator : Rs. 1045-45-1450-65-1775/-

Head of the Computer Centre : Rs. 1500-60-1800-100-2000-125/2-2500/- (All posts carry allowances admissible to the scale)

Qualifications

Professor : A first or second class Post-Graduate degree in the subject or related subject, a Ph.D. degree in the subject with not less than 10 years of teaching and research experience. Administrative experience preferred.

Reader : A first or second class Post-Graduate degree in the subject or related subject, a Ph.D. degree in the subject with not less than 5 years of teaching and research experience.

Lecturer : A first or second class Post-Graduate degree in the subject with not less than 50% of marks or grade 'B' under grading system, Ph.D. degree in the subject with not less than 3 years of teaching and research experience.

Librarian : A Master's degree in any discipline and a degree or a Post-Graduate degree in Library Science, with a minimum experience of three years as Librarian or teacher of Library Science.

Applications Programmer

A degree in Engineering or Science or a Diploma in Computer Science or related field with a minimum of 3 years experience and documented proof of expertise and aptitude in Computer Programming.

Console Operator

A degree with a minimum of one year experience in Console Operations and the operation of peripheral devices of a modern computer centre.

Head of the Computer Centre

Ph.D. in Computer Science or in a related field with substantial research experience in one or more areas of Computer Science. Such experience should be documentarily supported by publications in standard journals, presentation in national/international conferences, research supervisions, membership in professional societies/academics etc. In addition to his/her own specialisation the candidate should have a good knowledge of the State-of the-Art in all fore front areas of Computer Sciences and be able to give leadership and direction and develop various aspects of computer science education and research. He/she should also have administrative experience, and ability to manage a large department and to assist in the practical applications of computerisation in various aspects of University administration.

Deputy Registrar

1. Master's Degree with good academic record.
2. Atleast 10 years of Administrative and Secretarial experience in a responsible position.
3. Experience of committee work and knowledge of Management techniques preferable.
4. Age below 50 years.

Note : For qualifications to the post of Project Officer, the intending applicants may see prospectus.

The rules of reservations for Open Competition (32%), Backward Class (50%) and Scheduled Castes/Scheduled Tribes (18%) will be followed and also Communal Roster System adopted for the cadre of Lecturer only.

The Syndicate reserves the right (1) to decide on reservations for the particular department for each post, and (2) to fill up consequential vacancy if any.

Applicants who had previously applied to any post in response to earlier advertisement in the University should specifically apply again for the post now advertised.

Further details regarding qualifications, field of specialisation and other requirements for these posts and specimen copy of application form may be obtained from the Registrar, University of Madras, Chepauk, Madras-600 005 on requisition together with self-addressed Rs. 3.00 stamped envelope.

ANDHRA PRADESH AGRICULTURAL UNIVERSITY
ADMINISTRATIVE OFFICE 'RAJENDRANAGAR'
HYDERABAD-500030

Advertisement No. 4/RC/88 **Dated : 20-8-198**

LIMITED RECRUITMENT CONFINED TO SCHEDULED CASTE AND SCHEDULED TRIBE CANDIDATES

Applications are invited from qualified candidates belonging to Scheduled Caste and Scheduled Tribe for the following posts :

SUBJECT	Assoc. Prof. Cadre Rs. 1200-1900 (UGC Scale) Old Scale	Instructor Cadre Rs. 1380-2750 (State Govt. Scale
1. Agronomy	2	13 *
2. Plant Breeding	5	11 *
3. Entomology	2	8 *
4. Horticulture	3	6 *
5. Extension	2	2
6. Plant Physiology	1	1
7. Agril. Engineering	2	4
8. Plant Pathology	2	1
9. Soil Science & Agril. Chemistry	1	7 *
10. Agril. Economics	—	2
	20	55
	(S. Cs. 13 S.Ts. 7)	(S.Cs. 31 S.Ts. 24)

***NOTE :** (1) A few of the above posts borne on the Non-Plan budget will be filled up after the ban imposed by the Government is lifted.

(2) In case sufficient candidates are not selected in one discipline, the same is likely to be made up in other disciplines.

Full details regarding the qualifications prescribed for the posts, other particulars and the application forms can be had from the University on payment of Rs. 10/- in person or through a crossed Demand Draft drawn from State Bank of India, State Bank of Hyderabad and Andhra Bank, in favour of the Comptroller, A.P. Agricultural University, Rajendranagar drawn on the State Bank of Hyderabad, Rajendranagar Branch. (I.P.O.s will not be accepted) A self-addressed and stamped Rs. 2-50 envelope of the size of 35 cm × 15 cm may also be sent. The covers containing the requisitions for application forms must be superscribed "Requisition for application form" and addressed to Registrar, Administrative Office, Andhra Pradesh Agricultural University, Rajendranagar, Hyderabad-500030.

The last date for receipt of application forms is **20-9-1988.**

K.M. Azam
REGISTRAR

Requisition for applications should be made so as to reach this office **on or before 5 P.M., 16-9-88.**

N.B. : 1. Applications should be made only in the form prescribed by the University.

2. Applications received after the last date will be summarily rejected.

3. Candidates ABROAD may apply on plain paper, enclosing their BIO-DATA (8 Copies).

4. Candidates with outstanding academic/research record will be considered for higher start in the scale.

Application Registration Fee

A registration fee of Rs. 10/- will be charged for each category of Post viz. Professor/Reader/Lecturer / Librarian/ Project Officer/Deputy Registrar for all applicants except those belonging to Scheduled Castes and Scheduled Tribes. The candidates should remit the fee only by means of DEMAND DRAFT drawn in favour of the Registrar, University of Madras, towards Registration Fee.

N.B. : **Application received after the last date and without registration fee will be summarily rejected.**

PANJAB UNIVERSITY
CHANDIGARH
Advertisement No. 8/88

Applications are invited for the following posts so as to reach the Secretary to Vice-Chancellor, Panjab University, Chandigarh, by **26-9-88**, alongwith postal order of Rs. 10/- in favour of the Registrar, Panjab University, Chandigarh :

1. Dean, College Development Council-1
   (Pay-scale Rs. 4500-150-5700-200-7300, Revised).
2. Associate Dean, College Development Council-1
   (Pay-scale Rs. 3700-125-4950-150-5700, Revised).

Qualifications

1. Dean, College Development Council

Essential

(i) At least Second Class Master's degree with experience of teaching for 20 years at the College/University level; and

(ii) At least 5 years experience of administration as Principal/Head of Department or equivalent post.

In deserving case, the requirement of experience may be reduced to 3 years by the Selection Committee.

Desirable

Intimate knowledge of the functioning of affiliated colleges, preferably with postgraduate classes.

2. Associate Dean, College Development Council

Essential

At least Second Class Master's degree with teaching experience of 15 years at College/University level.

Desirable

(i) Administrative experience at College/University Department level.

(ii) Intimate knowledge of the functioning of affiliated colleges.

Note

1. The appointment of the Dean, College Development Council shall be upto 31-3-1990 for the present. In case the tenure of this Scheme is extended by the U.G.C. the successful incumbent will have the full term of three years from the date of appointment on probation of one year.
2. At the expiry of one term, the Dean may be appointed for another term but not beyond the age of 65.
3. Age for the post of Dean should be preferably below 57 and in no case more than 62 on 1.7.1988.
4. The term of appointment of Associate Dean shall be upto 31.3.1990 for the present. In case the tenure of this Scheme is extended by the UGC beyond that date, the term of the Associate Dean may be extended but not beyond the age of 60 years. No person will be eligible to be appointed or to continue beyond the age of 60 years.
5. It is not obligatory on the part of the University to call all qualified persons for interview.
6. The University may, if it so chooses, appoint a person on deputation.
7. The Vice-Chancellor could place before the Selection Committee

NEW RELEASES

Bibliography of Doctoral Dissertations in Natural and Applied Sciences 1984-85	Rs. 320.00
Handbook of Engineering Education	Rs. 50.00
Task Force Report on Autonomous Colleges and Departments	Rs. 60.00

Address Enquiries to :

Under Secretary (Publications)
ASSOCIATION OF INDIAN UNIVERSITIES
AIU House, 16 Kotla Marg, New Delhi-110002

Telephones : 3310059, 3312305, 3312429, 3313390, 3323094
Telex : 31 66180 AIU IN GRAM : ASINDU

names of suitable persons for its consideration alongwith applications received in response to the advertisement.

8. On the recommendations of the Selection Committee, the appointing authority can relax any qualifications in case of those considered by it to be eminent educationists/otherwise suitable.

9. The posts are non-vacation academic positions.

Persons already in service must route their applications through proper channel. They may, however, send an advance copy of their application, on the prescribed proforma, direct to the University. They will be allowed to present themselves for interview only on the production of 'No Objection Certificate' from their employers. Incomplete forms will not be considered. Forms received after the due date are liable to be rejected unless the Vice-Chancellor condones the delay by a special order. Attested copies of certificates in support of qualifications for Matriculation/School Leaving, Graduation and Post-Graduation examinations be attached to the application. Canvassing in any form will disqualify the candidate.

Application forms can be obtained from the Cashier, Paniab University, Chandigarh, personally on payment of Rs. 2/- or by making a written request to the Assistant Registrar (Estt-I), Panjab University, accompanied by a self addressed stamped (worth Rs. 3.40) envelope of 23×10 cm. and postal order of Rs. 2/- drawn in favour of the Registrar, Panjab University, Chandigarh-160014.

REGIONAL ENGINEERING COLLEGE

HAZRATBAL, SRINAGAR, KASHMIR

Advertisement Notice No. 6 of 1988

Dated : 17-8-1988

Applications on plain paper with complete bio-data alongwith attested copies of all academic documents (including Date of Birth Certificate) accompained by Postal Order for Rs. 20/- (Rs. 10/- in case of SC/ST, Handicapped and Socially and Educationally backward class candidates) are invited for the following posts. The applications, complete in all respects, should reach the Registrar on or before **27-9-1988**.

1. Assistant Professor (Temporary) : Civil Engineering

2. Assistant Professor : Electrical Engineering

3. Lecturer/Teaching Assistant (Permanent/Temporary) : Chemical Engineering

4. Computer Programmer/Teaching Asstt : Electronics & Communication Engineering.

5. Computer Operator

A. Pay Scales (Un-Revised)

1. Assistant Professor : Rs. 1200-50-1300-60-1900

2. Lecturer : Rs. 700-40-1100-50-1600

3. Teaching Assistant : Rs. 700/- plus allowance

4. Computer Operator : Rs. 900-35-1040-EB-40-1280-45-1460

B. Qualifications

1. Assistant Professor : Good Academic record with a Doctor's degree in a relevant field. About five years perience of teaching and/or resea and development.

Provided further that candidates possessing Ph.D. may be conside if they have to their credit equiva research published work or design/de lopment work of a high order either the Institution or an Industry.

2. Lecturer : Essential : Master's d ree in appropriate field.

Desirable : Good academic rec with Ist class B.E./M.E. degree w teaching experience.

3. Teaching Assistant : First cl B.E. degree with at least 65% mar preferably having some teaching expe ence.

4. Computer Programmer/Teachi Assistant : Same as B-3 with proficien in Computer Programming/Applic tions, Running of Computer Sciences.

5. Computer Operator : Diplor holders (Computer Science) with fi years experience.

Candidates already in service shou route their applications through the present employer.

K.G. Ahma
REGISTRA

Shastri Indo-Canadian Institute

92, GOLF LINKS, NEW DELHI-110003

Corrigendum

FELLOWSHIPS FOR WOMEN IN DEVELOPMENT FOR THE ACADEMIC YEAR 1989-90

"The candidates should be willing to take up the fellowship, i offered, and undertake to leave for Canada by **September 15, 1989**" and not September 15, 1988, as published erroneously in *University News* 22 August, 1988.

SOUTH GUJARAT UNIVERSITY

UNIVERSITY CAMPUS, UDHNA-MAGDALLA ROAD,

POST BOX NO. 49, SURAT-395 007

Applications are invited in the prescribed forms (in eight copies) for the following teaching posts in Post-Graduate Department of the University :

Sr. No.	Department	Posts
1.	Business and Industrial Management	(1) One Professor
		** (2) One Lecturer
2.	Physics	(1) One Reader (Solid State Electronics)
		** (2) One Lecturer (Computer Science/Theoretical Physics)
		** (3) One Lecturer (Expt. Sold State Physics)
		** (4) One Lecturer (Theoretical Physics)
3.	Chemistry	** (1) One Lecturer (Inorganic Chemistry)
		** (2) One Lecturer (Analytical Chemistry)
4.	Education	(1) One Professor
		* (2) One Lecturer
5.	English	** (1) One Lecturer
		* (2) One Lecturer
6.	Public Administration	(1) One Reader
		* (2) One Lecturer
7.	Mathematics	* (1) One Lecturer in Mathematics knowledge of Computer Software shall be preferable.
8.	Rural Studies	* (1) One Lecturer
9.	Department of Social Sciences Methodology and Interdisciplinary Studies Cell.	(1) One Reader
10.	Economics	** (1) One Lecturer
11.	Computer Centre	(1) One Reader
		** (2) Two Lecturer
12.	University service and Instrumentation Centre	(1) One SeniorScientific Officer

Note

* These posts of Lecturers are reserved for Scheduled Caste/Tribe / Other Backward Class (Baxi Panch) of Gujarat State and only candidates belonging to these classes need apply.

** These posts of Lecturers are reserved for Scheduled Caste / Tribes/and Other Backward Classes but if suitable candidates are not available, they will be filled by any qualified candidates from any class/caste.

Pay Scale for the Above Posts are as under

(1) **Professor** : Rs. 1500-60-1800-100-2000-125/2-2500

(2) **Reader** : Rs. 1200-50-1300-60-1600-Assessment-60-1900.

(3) **Lecturer** : Rs. 700-40-1100-50-1300-Assessment-50-1600,

(4) **Senior Scientific Officer** : Rs. 1100-50-1600.

In addition to pay, the permanent teacher of the University Department are entitled to draw Dearness Allowance, House Rent Allowance and other benefits like Pension-cum-Gratuity, Leave Travel Concession and Medical benefits.

Candidates belonging to Scheduled Castes / Scheduled Tribes and Other Backward Class should clearly indicate in their application the caste to which they belong and attached necessary certificate alongwith their application.

Information about qualifications and special field in which the appointment on each post is to be made will be supplied with prescribed application forms which can be had from the undersigned on payment of Rs. 7/- in cash or by Postal Order alongwith self-addressed envelope of 22 cm × 13 cm size with postal stamp worth Rs. 4-60 ps. affixed thereon. Canvassing in any form will disqualify the candidates.

The last date for receipt of application is **30-9-1988.**

G. A. Desai
REGISTRAR

ANNA UNIVERSITY

MADRAS 600 025

Advertisement No. 5497/L3/88-2

Applications are invited in the prescribed form for awarding **Teaching/Research Fellowships.**

Qualifications : First Class B.E./B. Tech. OR First Class M.E./M. Tech. subjects. The candidates must have first class only those with good academic record need apply.

Fellowship : Rs. 1,200/- p.m. for Bachelor's Degree holders in Engineering, Technology subjects. Rs. 1,300/- p.m. for Master's Degree holders in Engineering, Technology subjects.

Age Limit : 24 years for holders of Bachelor's Degree in Engineering and Technology subjects. 26 years for holders of Master's Degree in Engineering and Technology. Relaxable at the discretion of the University in case of persons with field experience.

Duration : The Fellowship is tenable for three years.

Area of specialisation : Metallurgy and Computer Science.

During the period of Fellowship the candidates will be given an opportunity to qualify for a higher degree.

Application form and other details can be had from this office on Requisition accompanied by a Crossed Indian Postal Order for Rs. 10/- (Rupees Ten only) dated not earlier than 26-8-88 in favour of the Registrar, Anna University, Madras-25 together with a stamped self addressed envelope (Rs. 2/- of size 22 cm × 10 cm). Requisition for application form and other details will be entertained upto 19-9-88.

Last date for receipt of completed application form is **23-9-88.**

REGISTRAR

SHRI JAGANNATH SANSKRIT VISHVAVIDYALAYA

SHRI VIHAR : PURI

Advertisement No. 7880 **Dated : 19.8.1988**

Applications in the prescribed form are invited from the intending Candidates for the following posts in the Teaching Departments of Shri Jagannath Sanskrit Vishvavidyalaya, Puri.

Sl. No.	Name of the Teaching Department	Name of the Post	No. of Vacancy
1.	Sahitya.	1. Professor	One
2.	Vyakarana.	1. Professor	One
		2. Reader	One
3.	Dharmashastra.	1. Reader	One
4.	Nyaya.	1. Reader	One
5.	Vedanta.	1. Reader	One
6.	Sarvadarshan.	1. Reader	One

II. The Posts carry the following scales :

(i) **Professor** : Rs. 1500-60-1800-100-2000-125/2-2500/-

(ii) **Reader** : Rs. 1200-50-1300-60-1900/-

The scales of pay are likely to be revised from time to time.

III. **Age limit** : Below 60 years.

IV. **Qualification**

(A) **Professors**

An eminent scholars in relevant discipline with Post Graduate Acharya or its equivalent degree with Vidyavaridhi/Ph.D./and/or published work of high quality and actively engaged in research. About ten years experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar in relevant discipline with established reputation who has made significant contribution to knowledge.

(B) **Readers**

(a) Good Academic record with Vidyavachaspati / Vidyavaridhi/ Ph.D. / D.Litt. or equivalent published work. Evidence of being actively engaged in (i) Research or (ii) Innovation in teaching methods or (iii) Production of teaching materials.

(b) About 5 years experience of teaching and/or research provided that at least three of these years were as a Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding record of teaching/Research.

Explanation

For determining "Good academic Record" the following criteria shall be adopted :

(i) A candidate holding Vidyavachaspati / Vidyavaridhi or equivalent degree should possess atleast a second class Post Graduate Acharya / Master's degree in relevdnt discipline with atleast 55% marks or its equivalent grade.

(ii) A candidate without Vidyavachaspati / Vidyavaridhi or equivalent degree should possess a high Second Class Post Graduate Acharya/Master's degree in the relevant discipline with 55% marks or equivalent grade and Second Class in Shastri/Bachelor degree

OR

(iii) A candidate not possessing Vidyavachaspati / Vidyavaridhi or equivalent degree but possessing Second Class Post Graduate Acharya / Master's degree in relevant discipline should have obtained first class in the Shastri/ Bachelor degree.

Note : I. Candidates with Acharya (New) degree from this Vishvavidyalaya or an equivalent degree from any other Sanskrit University or from the Rashtriya Sanskrit Sansthan or any other recognised institution will be considered equivalent as Post Graduate degree holders in the relevant discipline. M.A. Degree from General Universities with at least 5 years of teaching experience at Post-Graduate level in Acharya or equivalent traditional courses in relevant subjects will be considered equivalent as Post-Graduate degree in relevant discipline.

Note : II. Experience will be counted only of college teaching. Experience acquired as Post Graduate Teacher or Classical teacher in High Schools shall not be counted.

Note : III. Experience must be in the rank of a Lecturer and that too in the relevant discipline.

Applications in the prescribed forms accompanied by copies of testimonials, publications and a recent pass port size Photograph should be sent to the Registrar, Shri Jagannath Sanskrit Vishvavidyalaya, Shri Vihar, Puri so as to reach him on or before 30.9.88.

Prescribed application form (seven copies) can be had from the Office of the Vishvavidyalaya, Shri Vihar, Puri on payment of Rs. 14/- in person or Rs. 18/- through money order to the address of Finance Officer, Shri Jagannath Sanskrit Vishvavidyalaya, Puri.

Note : IV. The Vishvavidyalaya reserves the right to reject any or all applications without assigning any reason thereto.

REGISTRAR

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University News

20

MONDAY, SEPTEMBER 12, 1988 Rs. 2.50

R. Venkataraman, President of India, pressing the button to inaugurate the Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore. Seen on his right are Dr. P.C. Alexander, Governor of Tamil Nadu, Smt. Janaki Venkataraman and Dr. Rajammal P. Devadas, Vice-Chancellor of the Institute.

ARCHIVES

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UNIVERSITY NEWS

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

30 SEP 1988
C.F.T.R.I., MYSORE

Planning Human Resources at Macro-Level

R.M. Tungare*

Planning of Human Resources

This article attempts to identify certain major issues while planning our human resources at macro level. The identification of these issues will help in planning human resources effectively. The different Components of human resource development (HRD) are complementary in nature and if this complementarity is properly understood it will help in achieving an integrated approach towards planning our human resources. The concept of human resource development at macro level aims at increasing the capabilities of our resources so that their productivity in their respective functional areas will be increased. This will ensure proper utilisation of our human resources and releasing the latent force for economic development.

Complementarity of Different Components of HRD

The different components of HRD like education, health, housing are complementary in nature. The degree of this complementarity is stronger in early childhood stage.

This is obviously because of the fact that, being the formative period of human life, the impact of various components would be greater. Also, the direction in which this complementarity operates may also vary in different age groups. For example, better health status of children would improve the response to the investments in education. At later stages of life this complementarity between the two i.e. health and education may be lower. Likewise, better education of adults would lead to better health care of children. Thus there is an inter-generational flow of the complementarity effect from the earlier generation to the next generation so far as effect of education on health is concerned. The degree of complementarity and the age group of human beings is related as in the childhood and old age there seems to be higher complementarity among various components of human resource development.

One thing is clear that this complementarity relationship is stronger in case of HRD factors for the low income countries and at the initial stages of development than in high income countries and higher stages of development. This complementarity relationship peculiarity has got very important implications from the policy point of view. Once we understand that the different components of HRD have got complementary effect and possibly there is an inter-generational flow of this complementarity effect, we must adopt an integrated approach towards HRD. While planning our human resources at macro-level this aspect should be taken note of. The policies with reference to individual components of HRD should not be devised separately and independently. It calls for an integrated, comprehensive and long-term planning rather than the short-term view. The creation of separate ministry of human resource development is a welcome step in this direction and its fruits will be realised in the long run.

**Reader in Economics, Chh. Shahu Central Institute of Business Education & Research, University Road, Kolhapur-416 004.*

It may be suggested that the ministry of human resource development may be entrusted with the task of devising an integrated policy toward different components of HRD. The different components like education, health, housing may be clubbed together for this purpose.

Long-term Approach for Planning Human Resources

In case of a developing country like ours where scientific manpower planning approach is still in its infancy, certain thrust areas should be brought out very clearly. Even conceptually we must seek clarification at this stage only so that further human resource planning takes the right direction.

The percentage of working population in the total population is the rate of labour force participation in the economy. This actively engaged population in economic activity in fact determines the productive capacity of the country, since together with the techniques of production which prevail at any given moment, the number of workers sets the upper limit to the amount of output. This labour force participation in different sectors of the economy gives us a realistic picture of how resources are being utilised for different occupations and industries. Instead of accepting this labour force participation rate at any given time and leaving this factor to the vagaries of prevailing situation, it may be systematically planned at macro level not only for the economy as a whole but even for different sectors of the economy. Basically the percentage of actively engaged population i.e. working population which again may be defined in terms of age group of 15-55, is determined by such factors like health, the level of nutrition, welfare measures etc. Its sectoral distribution in turn will be mainly guided by levels of education. The productivity of this actively engaged population either in self-employment or wage employment will be determined by such factors like training, schemes for skill formation etc. The present population upto the age group of 14, is also to be considered in creating active and productive labour force in the age group of 15 to 55. In fact more we invest in the age group of 0-14 the more the benefits we shall derive in future from the labour force of 15 to 55. The resources used for the purpose of human capital formation among children are what Schultz terms as 'investment in child quality' and such an investment in child quality provides a firm basis for human capital formation in the subsequent stages of human life. In fact different components of human capital formation would be acting more in unison in the childhood stage. This factor may find a due place in policy formulation. F example better health situation of children will improve their response to investment in education. Sam is the case with nutritional food intake. Better nutr tional food intake will also improve the educationa performanee of children. In fact this has been empirically found to be valid in the village Dhabo (Taluka Vengurla, Dist. Sindhudurg of Maharashtr State). The school children were regularly given thic paste made from rice (Paije) and in the subsequen period their educational performance improved considerably. This has valid implications for policy formulation. When we talk about investment in education in primary and secondary education, its return i the long run will be determined by the nutritiona food intake of school going children. In order t ensure better response to this investment in education we must devise a suitable programme for providin nutritional food to school going children. This complementarity if lost sight of will make this investmen in education less productive giving marginal returns In fact this enables us to make hypothetical statemen that even if we include the cost of this nutritiona food intake, in the long run the returns on investmen in education would certainly offset this cost.

The magnitude of this kind of a proposition woul be clear if we see the age distribution of populatio according to 1981 census. The population in the age groups of 0-14 and 5-14 forms 12.6 and 26.9 per cent respectively of the total population as per 1981 census. It makes the total of 39.5 per cent of the total population which falls in the age group of 0 to 14. As constitutionally state is to provide free education upto the age of 14, the implication of our above hypothesis would be that for almost 40 per cent of population in the age group of 0-14, we must provide not only free education but also free nutritional food intake. This will help to build up strong, stable and productive labour force in the age group of 15 to 59 for different productive activities in the economy.

The Problem of Literacy

The problem of literacy is again a major problem in case of Indian economy since it is our fair assumption that in the age group of 15 to 59 i.e. working population, the quality of human resources will be determined mainly in terms of literacy rates. On the whole, literacy rates have been increasing but they can hardly be stated as impressive. For example, literacy rate according to 1981 census comes to 36.2 with a significant increase from the literacy rate of 29.5 in 1971 census. But this literacy rate for femal opulation comes to 24.8. The literacy rate for female opulation for all the census periods is lower as comared to that of male population. The lower literacy ate for female population has always been a cause of oncern for the policy makers. If our assumption is hat the child rearing and grooming function is mainly one female population, this problem assumes serious limensions. In that case investment in 'child deveopment' will have sufficient room for increase if iteracy rates for female population are increased. In he light of intergenerational flow of HRD factors his matter calls for urgent attention of the policy makers.

istribution of Population by Levels of Education

This kind of distribution of population by levels by education is very necessary for planning our human esources at macro level. The 1981 census has got he following distribution of population according to levels of education.

Distribution of Population According to the Levels of Education
(1981 Census)

	No. of Million
Total Population	665.3
Literates (mn)	241.0
Primary	75.9
Middle	42.4
Secondary/Matriculation	28.0
Higher Secondary (includes Pre-University)	9.8
Technical Diploma	1.4
Graduates and above	9.5
Others	74.0

Source : Statistical Outline of India 1986-1987.

In this distributional pattern, one thing calls our attention. The total number of technical diploma holders is just 1.4 million. This constitutes a very small percentage in the total literate population. In a country like India which is on the threshold of development, the percentage of technically qualified personnel would be a relevant indicator. While attaining the levels of education, the component of technical education should be given due attention. This is more so in the light of meeting needs of expanding industrial sector of the economy.

Tailor Made Approach for Skill Formation

In planning of our human resources one more aspect needs our urgent attention. The skills required for different occupations would be essentially different and hence it requires tailor made approach for skill formation. The occupational distribution of main workers according to 1981 census will clearly bring out this approach. Out of the total population, main workers constitute 222.5 million. The occupational distribution of this main worker population is as follows :

Occupational Distribution of Population

	No. of Million
Cultivators	92.5
Agriculture labour	55.5
Livestock, forestry etc.	5.0
Mining and quarrying	1.3
Household industry	7.7
Other Industry	17.4
Construction	3.6
Trade and Commerce	13.9
Transport, Communication	6.1
Other Services	19.5

Source : Statistical Outline of India 1986-1987.

It is clear from the above table that the percentage of main workers in the total number of workers engaged in Industry comes next to Agriculture. This occupational distribution clearly brings out the need for sectoral approach in skill formation. The vocational training and education component in the new education policy should have this bearing at the time of implementation. It can be easily seen that the number of technical diploma holders falls short of the total requirement for industrial sector. There is an urgent need for expanding the scope of apprenticeship scheme which will help in meeting the requirements of industrial sector.

A brief mention of the present vocational education scheme will not be out of context. At present vocational scheme of education is at plus two stage of higher secondary level. Various courses for small scale industry and self employment, office management are in operation. The main purpose of the course for small scale industry management is to have trained manpower at the middle level for small scale industrial sector who may assume even entrepreneurial responsibility. Likewise, the purpose of office management course is to provide trained office personnel for an expanding corporate sector. I think this purpose of vocational scheme has been hardly fulfilled. Instead of having acted as a terminal stage, it has actually made the backdoor entry to collegiate education. This reflects a very sorry state of affairs of our plus two stage of education. The ultimate purpose of having that particular stage should be clear and accordingly it should be consistently pursued. Secondly, this kind of an attempt of skill formation needs attention at the highest level with necessary changes in other policies. For example, the present scheme of vocationalisation calls for amendments in our Apprenticeship Act also. The various courses from the vocational stream may be brought within the purview of the Apprenticeship Act. Even the salary structure of trainers/teachers may be suitably altered to attract trained personnel in imparting training. In case of dominant occupation like agriculture, the source of training still has been family where formalised vocational scheme seems to have progressed very slowly.

Higher Education and Human Resource Development

There are only 3 persons out of every 1000 persons who have some degree or technical qualification. Thus, the first problem of higher education is its very narrow coverage. The subject wise distribution of the stock of degree holders and technical personnel and also of enrolment shows very strong preference for Arts/Humanities, Commerce and also for Science Preference for general courses against professional courses is the other major aspect about higher education's role in human resource development. This type of subject bias is not in tune with the charted path of economic development of the country. The recent trends however show enrolment propensities for humanities.

		Percentage of increase in enrolment in 1982-83 over 1975-76
Humanities	—	27.8
Science and Technology	—	32.4
Others	—	66.7

Source : P.R. Panchamukhi, Leading Issues in Human Resource Development in India.

The present expenditure pattern on primary, secondary and higher education will bring out priorities in our educational policy. The following table shows per student expenditure at different levels of education at 1970-71 prices.

At 1970-1971 Prices

(In Rs.)

Year	Universities	General Colleges	Professional Colleges	Primary	Middle	Secondary
1950-51	4011.7	486.7	1640.0	41.9	73.1	153.5
1960-61	4581.1	548.8	1476.2	50.7	72.5	166.4
1970-71	4141.2	421 6	1179.0	57.0	84.9	168.9
1975-76	3664.5	330.9	890.1	53.2	83.3	148.9

Source : P.R. Panchamukhi, Leading Issues in Human Resource Development in India.

The allocation to higher education of all types has been declining over the years and has been increasing for primary and middle education. Still, the expenditure on higher education per pupil has been a multiple of expenditure per student on primary and secondary education It clearly brings out the need to have fuller utilisation of technically qualified manpower. The unemployment, under employment and misemployment are the different facets of ineffective human resource utilisation, which calls for our urgent attention in planning human resources.

Conclusion

It may be concluded that different components of Human Resource Development should be viewed in an integrated manner. In planning and development of human resources, certain major issues should be properly identified. They should have due attention in policy formulation at macro level. This will ensure higher returns on investment in different components of human resource development. The policy of human resource development calls for a fresh look with long term perspective. ☐

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THE INFORMATION COMMUNITY

Vital Link for Progress in the Third World Countries

T. K. S. Iyengar*

Background

Science and Technology have made it possible for several countries to provide a high standard of living for their people, through significant contributions in specific fields of national development. However, the third world countries are faced with serious problems in the area of communication of scientific information. The most important problem is the choice of the right kind of information and the right technique for communication. This implies the need for identification of the different categories of users, their information seeking behaviour patterns, capability of assimilation and application of information, the different tasks in which they are involved whose efficiency can be improved by information supply, etc. In developing a model of an information service, for example to meet the information needs of third world countries, it is desirable to identify the common factors and differentiating characteristics.

Methods of Approach

The Third World Countries must adopt a radically different approach to problems of dissemination of scientific information in view of the nature and magnitude of the problems which are persisting in developing countries. Many countries have national information plans but the tendency seems to be to cater to elite scientist groups. The national information bodies must be requested to give high priority to creation of special information networks to tackle rural problems.

We have to take into account the high rate of illiteracy in the developing countries and also the fact that the majority of the population lives in villages which are often remote and inaccessible. Another common feature in the developing countries is that the occupation of the majority of the rural population is agriculture or agro-based village or cottage industries.

The Area of Information

The basic human needs are food, drinking water, clothing, shelter, energy for cooking and lighting, healthy and sanitary environment. The priority for providing information services to the common man could be in the following areas :

(a) *Natural Resources*

- Agriculture for food production
- Agriculture for growing cotton for clothing
- Water resources for drinking and irrigation
- Fuel for energy requirements
- Building materials for houses

(b) *Energy*

- Coal, Oil, Biogas, Electricity, Solar energy (e.g. for drying grains).

(c) *Health and Sanitation*

- Steps preventing communicable diseases
- Environmental hygiene
- Purified water supply for drinking
- Proper disposal of human wastes, sanitation system.

(d) *Employment*

- Agriculture
- Agro-industries, food processing
- Building industry for housing
- Spinning handlooms for cloth
- Industries for making household articles, utensils, furniture (carpentry), agricultural implements.

The information services have to cater to the needs of the common man in the above areas. The services have to be directed (i) to promote information to the extension worker who is a middle man in the transfer chain, and (ii) to meet the needs of the actual user.

The importance of fundamental research into socially relevant problems must not be lost sight of.

Librarian, Indian Institute of Science, Bangalore, 560 012

Basic information services dealing with such areas must also be made available, but the problems of the rural areas must get high priority.

The Economics of Information

In many Third World Countries a problem which is likely to crop up frequently is the evaluation of cost systems. All information services require financial resources. The effectiveness of any information activity is often directly a function of the amount of money spent on it. Since the financial resources of developing countries are limited, a careful evaluation of the effectiveness is needed.

How can effectiveness best be quantified ? A simplified approach is for measuring cost effectiveness of information transfer in the sectors of health, agriculture and industry. The following indicates possible variables which can express effectiveness for the three sectors :

Examples of variables to measure effectiveness

Particulars	Variables
Health	Number of persons with a specific disease per unit of population
Agriculture	Yield of a crop cultivated area of a new crop
Industry	— annual output of a specified product — annual exports — annual income — number of new products

The efficiency could then be expressed, for example, as :

Percent change in a variable during a certain time interval per amount of money spent during the same interval.

$$\text{or} : E = \frac{N\,(t) - N\,(O)}{N\,(o)\ (\text{time})}\ X\ 100\ \ \frac{1}{X\ (\text{Rupees}/(\text{time})}$$

When E = Efficiency

N = Frequency (No. of times a variable occurs)

t = Input

O = Output

If there is no change, E is zero, i.e. the Information service is totally inefficient.

The amount X spent should include costs of dissemination only and could be divided up as follows :

X_1 Mass media Radio, T.V., Newspaper a major role.
Marketing

X_2 Printed information (Newspapers play a vital role)
Manuals

DISSEMINATION

Brochures
Posters, etc.
Extension Workers
Personnel costs

X_3 Audio Visual Techniques
Transportation costs
Equipments

Total cost $X = X_1 + X_2 + X_3$

The Indian Scene

The progress of a developing country like India very much depends on the application of science for the solution of its problems. It is a common feature in many developing countries, like India, that amidst ignorance and poverty, advanced scientific institutions also exist. Eminence of scientific achievements amongst the elite and poverty amongst the common people co-exist. India, for example, boasts of having the world's third largest scientific manpower, but also has the highest percentage of unemployment and a low per capital product. Popularisation of science and effective dissemination of scientific information both in the urban areas, and more particularly amongst the large rural population have an important role to play in the progress of developing countries like India. At the moment most of the information services reach only 10% of the population in Third World Countries. Information must be secured and sorted out, so that it can be presented to various sections of the people, including specialists, laymen and non-literate persons alike. In India, more than 60% of the population is illiterate and remain blissfully ignorant. Hence information dissemination has to be geared to tackle national problems, so that the impact of science and technology will benefit all.

An illustration of different categories for whom nformation is to be provided is indicated as follows :

nformation Dissemination

For Illiterate Masses : Audio-visual means, slides, apes, film, non-formal education dealing with pressing social problems.

For partially Educated Persons : Linking all stages of education with social problems and creating an awareness about social requirements.

For Highly Educated or Specialists Scientists : Broad based science by means of popular articles, semi-socially relevant problems.

Educating the Masses

The masses who are mostly illiterate must be educated about science and technology. In spite of many attempts to apply science for the solution of problems like malnutrition, ill-health due to bad sanitation, etc., there has not been much success.

There is need for disseminating, relevant information to the masses in the language, form, fashion and system digestible to them, keeping aside scientific publications, mass contact programmes and the mass media like radio, T.V., popular magazines, newspapers, etc.

Suggestions

Information is a vital link for a progress in Third World Countries. It is felt that science and technology information services, particularly those in developing countries do not reach and not geared to serve the needs of the economically and socially less developed sections of the community. The national development should really mean the overall improvement of the quality of life of the entire society and not of a particular segment. In most of the Third World Countries, there has been in recent years, a realization of this fact, and there has been a corresponding reorientation of the national development programmes. Suitable plans which focus attention on this larger segment of society have been drawn up.

If information services are intended to support national development as an alliance for progress they should be designed to serve the rural community to improve its productive capacity and its overall quality of life, which would mean progress. The extension services presently used for transfer of information, particularly for the agriculture, small industry and health sectors are functioning independently of each other as well as of the national information system. As a result, there is on the one hand duplication of effort, and on the other hand inadequate and inefficient use of available resources. ☐

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CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
September 26-28, 1988	**International Conference on Welding Technology in Developing Countries**	**To provide an opportunity to scientists and technologists from developing and advanced countries to share their experiences in the area of Welding Technology.**	**University of Roorkee, Roorkee.**	**Prof. P.C. Gupta, Organising Secretary, International Conference on Welding Technology in Developing Countries, Department of Mech. & Ind. Engg., University of Roorkee, Roorkee-247667**
October 27-29, 1988	National Seminar on Statistics in Medicine, Health and Nutrition.	To discuss Data-Base and Analysis in Health and Nutrition—Present and Future.	Department of Statistics, National Institute of Nutrition, Hyderabad.	Dr. K. Visweswara Rao, Organising Secretary, National Seminar on Statistics in Medicine, Health and Nutrition, Department of Statistics, National Institute of Nutrition, Indian Council of Medical Research, Jamia Osmania, Hyderabad-500 007
October 31-Nov. 4, 1988	Short Term Course on Remote Sensing and Geo-Data Base with Socio Economic Information	To expose the concept of Data Base Approach towards handling and analysing the Remotely Sensed and Land-based Information.	Centre of Studies in Resources Engineering, IIT, Bombay.	Dr. T.V. Pavate Chief Project Engineer, Training Extension and Project Cell, RSD-VI, CSRE, IIT, Bombay-400076
December 13-17, 1988	**International Seminar on Education and Training in Water Resources in Developing countries.**	**To assess the requirements of manpower, education and training in Water Resources Sector upto the year 2025 in the developing countries.**	**Central Board of Irrigation and Power, New Delhi.**	**Mr. C.V.J. Varma, Organising Secretary, International Seminar on Education and Training, Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi-110021**
December 15-17, 1988	National Conference on Fluid Mechanics and Fluid Power	To provide a forum for exchange of information on topics in fluid mechanics and design, research and development activities in areas like power generation, aerodynamics, fluidics, biomechanics, etc.	Harcourt Butler Technological Institute, Kanpur.	Dr. N.L. Kachhara, Organising Secretary, 16th National Conference on Fluid Mechanics and Fluid Power, Mechanical Engineering Department, Harcourt Butler Technological Institute, Kanpur-208002

Convocation

Third Eye of Perception

"National integration in the Indian context is only or should only be the opening of that third eye of perception which can see the reality of this organism, the process of growth behind what appears as a staggering multiplicity of races, languages, social structures, regions, art forms, life-styles", said Dr. Kapila Vatsyayan, Secretary, Department of Arts, Ministry of Human Resource Development and Director, Indira Gandhi National Centre of Art while delivering the Convocation Address at the Fourth Annual Convocation of Manipur University. Elaborating the role of education as the most important vehicle for opening this third eye of perception, she said "delicate balances have to be found, new orders have to be maintained between the full flowering of regional identity and an equally strong perception of mutual dependence of regions and a continuous sustained awareness of being parts of a single whole. This is inculcation of a sense of community and the enlarged self which can contain differentiations of 650 million". Excerpts

At this moment of world civilization when man has delved more deeply and extensively into the nature of phenomena, as never before in human history, he also stands at the brink of a precipice which can cause disaster to the earth he stands upon and he himself threatens life of the human species.

Natural and environmental pollution and ecological imbalances created by Man and penetration into space and nucleas arms are iminent threats to survival.

In India while the second may seem distant, the first surrounds us along with the prospects of dealing with vast numbers of a new generation. In such a situation of gravity internationally and nationally, education as '*shiksha*' (learning) and education as *vidya* (science to explore, to know) is the single more crucial aspect of development which will enable 'Humanity' to have the perspicacity the '*vivek*' to ensure survival of life on this planet, and create conditions, physical and psychical, for a harmonious future.

Never before the wisdom of ancient India of the concepts of '*rta*' (a cosmic order, celestial and terrestial) of the interrelationship of man and nature, of the juxtaposition of freedom and discipline, the balance between the life of reflection and action, of harmony between the inner stillness and outer dynamic energy for the good of all (*Bahujan hitaye*) of the interdependability of the twin birds on a single branch of the Svetasvare and Manduka Upanishad (of the *bhokta* and *drsta*, the experiencer and the vigilant alert observer) become more pertinent than today. Education is the instrument through which this imbalance can be corrected once again to establish man-nature dialogue.

Ancient and even medieval India had evolved a system of education which aimed at developing the full potential of the human being in varying contexts and situations. A judicious balance of refinement of sensibility, working with hands, of inculcating ability for creative expression and sharpening of intellect was maintained.

The spirit of questioning in a quest of knowledge is reflected most powerfully in that dialogue between Nachiketa and Yama in the Katha Upanishad. The dialogue between Nachiketa and Yama symbolises in one intense moment, Man's quest for knowledge and that which lies beyond the pale of physical death.

In India, education was this quest for the unknown, unknown in the deepest recesses of the individual human psyche and unknown the formless beyond the world multiple forms. The spirit of enquiry enshrined in ancient India was the scientific temper we speak of today. Had it not been for this spirit of enquiry and of the fundamental commitment to the principles of co-existence, it would not have been possible for this culture to contain the staggering multiplicity of races, languages, religions. The principle of an unity permeating all manifestation, plural and diverse, is illustrated time and again in the questions and answers between teacher and pupil. Of these the dialogue between Shvetaketu and his son assumes great pertinence and significance : be it the famous story of breaking the fig or putting salt into water empirical experiments.

Dedication to duty, of relating knowledge to action, was crucial in such a system.

It was these ideals which enabled India to sustain a continuity despite political vicissitude and conquests. However, as we all know in course of time a cleavage took place between the speculative and the empirical, the written and the oral, the regional and the national, the sophisticated urban add the rural the *margi* and the *desi*. A model of interconnectedness of inter-webbing unity and oneness of goal and plurality of forms and expressions was replaced by a fragmentation and aggregation. The indigenous model of both education and culture was of defined roles, recognition of differentiation and the relationship of the parts to the whole. Interconnected and inter-dependence, consensus, co-existence were its mechanisms of cohesiveness. Alas, this was replaced by fragmenting the parts placing them in a hirarchical order and replacing the consensus model by a conflict model. Resultantly, during the last 200 years *Chasm* and *Schism* of many kinds developed not the least between the formal systems of education and the rich and varied artistic and cultural traditions of India. The few educated and the large human resource outside the system communicated but not fully with each other.

Now let us turn our attention to another problem, a problem which is recent but has begun on ugly proportions in India and I refer here to what constitutes national integration in the context of India.

When Tagore wrote that famous poem, sometimes called a Utopian Prayer, beginning: "Where the mind is without fear and the head is held heigh..." or when he composed that other poem which is India's National Anthem, "Jana Gana Mana", or earlier when Bankim called out to Mother India, "Vande Matram... Sujalam, Suphalam, Malayaj Shitalam...", or when Bharathi spoke of breaking the fetters, or when Iqbal called out "Sare Jahan Se Achha", or earlier further back in history when the Rig Vedic Seers spoke of concord of the community of men and the coming together of many, of Vasudeva Kutumbakam. Were these men and seers speaking of education or national integration ? Did they have in mind, a dichotomy or a dialogue between the human individual or a soul belonging to this earth, here and now and yet making the fulsome communion with nature earth, the spirits of the trees, and the joy of the experience of the incessant movement of the Sun and the Moon, night and day, or were they calling out for a kind of an arbitrary or an artificial national integration as an intellectual effort of bringing together intrinsically disparate heterogeneous units in a moment of great emotional and political crises ?

No. The answer clearly is, no. Because for them as for others in India, leaders, workers, seers, poets, musicians, saints, ancient and modern, life and the process of human growth and development was a continuous education, learning and experience of the totality. This basis and fundamental difference in approach towards both education and national integration will make it clear that in the Indian situation or in the situation of all plural cultures, which have been held together by a community of ideas and a cohesive life style, education is the touch stone by which life is measured. Education then is not a matter of individual attainment of specific skills but is a ceaseless process of expanding the self, to embrace larger and larger areas of human consciousness and to contain differentiations. Education first and last is the growth of the total personality where the inner and outer are harmoniously balanced, where the movement is from the gross to the subtle, and from the understanding of the one within to the many without. The process is continuous, beginning with birth going on and culminating in the wisdom and experience before the moment of death.

Where does education begin then ? It begins with the moment of birth. The warm security provided by the mother in biological terms, is transmitted into emotional security given to the child for life. This sense of security, physical and emotional, is his first sense of birth identity, the first lesson of attuning himself as a separate being to that other—the mother. This is an educational experience. From this moment to the next of perceptions through sensory and motor responses to darkness and light, to taste and smell, movement and stillness, awakening and sleeping, the educative experience is full every minute before any formal education begins. Gradually it all falls into place and we understand that as simple routine but it is not so simple because it is these first moments of education which provide the basis for a life-long journey of learning. The two together, the human and the natural environment then enlarge themselves into the environment of kinship patterns on the one hand and making adjustments with the natural, physical, ecological environment and then later societal environment. These fundamental experiences are the core involving an assertion or recognition of a distinctive identity and yet the indispensable need of communication, attunement and harmony. These remain always. When enlarged to individuals, societies, regions or nations they call for two fundamental demands of the human psyche, one freedom and the other discipline. Freedom born out of discipline and discipline or order born out of the very freedom of the spirit.

Now, let us come to national integration comprising both the concept of a nation as also integration. What is meant by this? The notion of national integration for some implies challenges of the incompatible, the creation of conceptual or a superimposed uniformity in the mistaken belief that a multi-racial, multi-linguistic multi-caste, multi-regional culture can only be integrated by a code of external conduct or an artificially nurtured uniformity which eschews differentiation. Perhaps this was the reason for some to come to the conclusion that in the Indian context the notion of a nation itself is a western gift of the 19th century. However, a closer look will reveal that different races, languages, communities, castes, religions in this country of ours have all been a single unified organism which has its different parts. National integration in the Indian context is only or should only be the opening of that third eye of perception which can see the reality of this organism, the process of growth behind what appears as a staggering multiplicity of races, languages, social structures, regions, art forms, life-styles. How then can education be the single tool or the most important vehicle for opening this third eye of perception where differentiation or respect for that other can be cultivated without a loss of freedom or identity and yet with a sense of not only deliberate or marterred tolerance but joy and therefore create a milieu of harmony?

Let's take the analogy of the human body, Does one ever talk about the integration of a little finger with the heart, or the integration of a circulatory system with the digestive system? Is it not a fact of life that each of these are inter-connected and inter-dependent in all the diverse and distinct systems by which the anatomy and physiology of our body is governed? Each has its own identity, place, importance, function in the body. It cannot exist without the other. It was this image of man which was used as a basic philosophic concept in the Indian tradition. Purusha as the microcism and Pursh as the macrocosm. These concepts brought home repeatedly the message that while each part is important, clearly differentiated, it has no place and identity unless seen in its function as a whole.

The education of the young and old, men and women was then a continuous process but through different paths. Sometimes, it was the transmission of the sacred word, the shruti from the teacher to the pupil, from the Guru to the sishya, at other times it was the written word and simpler still and more potent, it was through the strategies which this country evolved, through pilgrimages, festivals, functions, daily, weekly, annual calendar, the fairs and melas, these were and are milestones of the educational experience outside the formal system but equally if not more important for integration.

But we are no longer either in ancient India or in medieval India where at all times arose both integrators and creators such as the saints, gurus, pirs, fakirs drawn from the highest to the lowest classes. They ignored all percepts of standardisation, classification, purism and pietism. In the fields of whether it was worship or language, sound, meaning, music, social conduct and metaphysical belief. These were the great integrators of this culture whether it was Farid or a Khusro, a Jayasee or a Tulsi, or a Sur, or a Nanak—it were these, the integrators in someways who brought about the bridges of communication, between the tribal, the rural and urban levels of society. This problem continues in India and in terms of integration without harking back to the past one might identify the tensions that exist on four levels despite all conceptual unity: tension between or amongst tribal, rural and urban levels of society, tension which arises as aberrations amonst languages, tension which arises sometimes again as aberrations amongst religions, and tension which arises because of the disperate level of economy or education in rural agricultural levels and urban industrialised levels.

What part can education play in not only resolving this but making it into a creative effort? Delicate balances have to be found, new orders have to be maintained between the full flowering of regional identity and an equally strong perception of mutual dependence of regions and a continuous sustained awareness of being parts of a single whole. This is inculcation of a sense of community and the enlarged self which can contain differentiations of 650 million. The task is both challenging and difficult. It is no different than the challenge that was faced by Arjuna when he went into the war of Mahabharata. And therefore it became important for Krishna to reveal himself as the Vishvarupa in the 11th Chapter to show that whether it was regional identities, egos, languages, societies, religions they were all contained in that one.

The educational process is perhaps that moment where the Arjuna saw the vision of Krishna in his Viratarupa. Then the true identities are known and the path of action is clear. Nearer home let us recall a speech Jawaharlal Nehru delivered as a Convocation Address in 1949, that is relevant today and I quote :

> "Education stands for tolerance, for reason for progress, for the adventure of ideas and for the search for truth. It stands for the onward march of the human race towards even higher objectives. If the educational institutions discharge their duty adequately, then it is well with the nation and the people. But if the temples of learning themselves become a home of narrow bigotry and petty objectives how then will the nation prosper or a people grow in stature..."

and then he goes on to say, I quote :

> "...Let us be clear about our national objective. We aim at a strong, free, democratic India where every citizen has an equal place and full opportunity of growth and service, where present day inequalities of wealth, status and educational opportunities have ceased to be, where our vital impulses are directed to creative and cooperative endeavour.
>
> In such an Indian communalism, separatism, isolation, untouchability, bigotry and exploitation of man by man have no place and while religion is free it is not allowed to interfere with the political and economic aspects of the nation's life. If that is so then all this business of Hindu and Muslim, Christian and Sikh must cease in so far as our political life is concerned and we must build a united but composite nation where both individual and national freedom are secured".

Indeed Jawaharlal Nehru was articulating a perennial truth expressed in the Rig Veda :

"United your resolve
united your hearts
may your spirits be one
that you may long together
dwell
in unity and concord".

However, much has happened even between 1949 and 1987. Despite the Commissions and the efforts made by national and State governments, the comprehensive report of the Kothari Commission, the Educational Policy of 1968, the clarion call of our political leaders, the inspiration of our poets, the achievements of our scientists and the aspirations of the masses of India, there was the need of enunciating the new Educational Policy and what has this policy enunciated and why ?

New Educational Policy : Recognising both the goals of an accelerated pace of development as also the need to maintain a continuity with the rich and varied cultural traditions of India, the new educational policy seeks to :

1. Bridge the gap between the formal educational system and the diverse and multiple systems of cultural experience still alive and obtainable in the community.

2. The goals of this cultural and artistic component in education is to inculcate a perception of the totality of India with all its plurality and multiplicity of natural and cultural phenomenon, races, regions, languages, where each is a part of a whole.

3. To develop a sense of individual, local and regional identity alongwith an equal ability to respect and appreciate differentiation, in short tolerance and catholicity of views.

4. To refine sense perceptions individually as also collectively with a view to experience joy and fulfilment in both solitude and participation i.e. harmony and peace, inside and outside.

5. To develop manual and cerebral skills which enable the individual and social group to explore the past with discrimination in its aspects of validity in contemporaneity, in short, discrimination '*vivek*'.

6. To develop attitudes of questioning exploration, adventure, be it in the sphere of natural phenomenon, physical sciences or the cultural heritage.

7. To develop capacity to innovate, improvise and be creative in all situations and milieus.

8. To develop a capacity to perceive the inter-relationship and inter-dependence of levels of society (affluent and impoverished), rural, urban, regions, nations as also the world of science and the world of refined culture, of knowledge, of speculative thought as also action and above all a consistency between precept and conduct.

9. To utilise the arts not so much as professional skill but more as instruments of fostering human values, especially of harmony, balance and non.violence.

Strategies for achieving these goals can be diverse responding to the specific needs of the different cultural regions, stages of education, the different systems, formal and non-formal and the diverse institutional systems. Modifications in the content of curriculae, training of teachers, awareness programmes have to be carried out. Zonal centres, institutions of higher education in the fields of humanities, science and technology, archaeology, languages have to be systematically utilised to evolve programmes to meet these goals. □

Inspired and Inspiring Centre

Hon'ble Shri R. Venkataraman, President of India, inaugurated the Avinashilingam Institute for Home Science and Higher Education for Women (Deemed University) at Coimbatore on 29 August, 1988. The President described the Institute as "an inspired and inspiring centre where both the physical and spiritual needs of humankind are sought to be served. A chastity of the spirit and a nobility of character are to be seen here. An idealism that is practical and a pragmatism that is idealistic is also felt here." We are pleased to publish excerpts of the inaugural address for the benefit of our readers.

Sri Avinashilingam Home Science College for Women has been one of the outstanding institutions wedded to the cause of advancement of women in our country. Established in 1957 and nurtured under the inspiring leadership of Sri Avinashilingam, the institution has established a high reputation, not only for its standards of education but also for its tangible relevance to society.

In its founder, Sri Avinashilingam, affectionately called "Ayya" by one and all, we have one of the great educationists of India. An undaunted freedom fighter, a tireless warrior for ethical and moral values he is possessed of a clear vision of the future and, what is more, a determination to shape it. Sri Avinashilingam has had a distinguished career both at the State level and at the national forum. As a Legislator and a Minister no less than as a self-effacing social worker he has been one of the moulders of our socio-educational ethos. Sri Avinashilingam has been a father-figure here, to one and all. Gandhiji once described how he lived as a "father" among those he worked for :

> "I had always given the first place to the culture of the heart or the building of character, and as I felt confident that moral training could be given to all alike, no matter how different their ages and their upbringing, I decided to live amongst them all the twentyfour hours of the day as their father. I regard character-building as the proper foundation for their education and, if the foundation was firmly laid, I was sure that the children could learn all the other things themselves or with the assistance of friends."

The new 'Deemed University' and the students and teachers are indeed fortunate in having Sri Avinashilingam's paternal guidance and inspiration and his personal example of sincerity, dedication and hard work, as its First Chancellor.

And in Dr. Rajammal Devadas who has nurtured this institution we have a truly a truly committed person, an example of the kind of social engineer our country needs. Her tireless efforts and imaginative work have been crucial for the growth of this institution. I am sure that under the guidance of Sri Avinashilingam and Dr. Rajammal Devadas this institution will scale even greater heights.

One finds here in this Institution as, indeed, in the life career of Sri Avinashilingam, a fine and creative blend of the tenets of Sri Ramakrishna and Mahatma Gandhi. A chastity of the spirit and a nobility of character are to be seen here. An idealism that is practical and a pragmatism that is idealistic is also felt here. In short, this college is an inspired and inspiring Centre, where both the physical and spiritual needs of humankind are sought to be served.

The very objective of this institution when it was established by Sri Avinashilingam Education Trust was that of developing the total personality of girls and preparing them for their future career as well as service to the community. It has achieved in a short time a high reputation not only for its standards of education but also for its ethos, its emphasis on combining the rationalism of our sciences with the humanism of our arts. It has done high level research in the most advanced areas yet combined it with practical and living experience in the villages at the cutting edge of extension work. No wonder the institution has been attracting students from all over India and indeed many countries abroad. Even as a college it has always been a very special type of institution with a campus having all types of educational institutions, such as nursery school, primary school, higher secondary school and the teachers' college. Also attached to it are "Balwadis" in the villages and slums and Sri Avinashilingam Centre of Child Health and Nutrition. Thus, in a way this college has been a pioneering educational complex. The villages and the adjoining society have been a source material for education of students and researchers alike.

I trust the example of this Institution will be followed by all those who are running institutions for women's education, particularly in the mofussils. It is necessary that they address themselves to the challenge posed by the high dropout rate among rural girl students and the related phenomenon of female child labour. At home and at work, India's womenfolk have striven to create, to nurture, and to beautify human life. That they have done so much despite a plethora of handicaps, is indeed a matter of pride.

Both Swami Vivekananda and Mahatma Gandhi knew this. They knew that women are, essentially, character-builders. They determine the moral strengh of a society as mothers and, therefore, as our first educators. Gandhiji therefore accorded women a place of importance in the movement that he led here and, earlier, in South Africa.

India's struggle for freedom was not confined to removal of the foreign yoke but also towards the emancipation of the weaker and socially oppressed sections of the society such as Harijans and women. Many of our institutions which have since become 'deemed universities' were established during our freedom struggle mainly to give a national orientation to our education. They were associated with the great leaders of freedom movement. With the achievement of Independence we have turned to nation building tasks and it is appropriate that the deemed universities that are being established become pioneers in giving a new orientation to the education system to achieve the goals before the nation.

Out of 330 million women in India 255 million live in rural areas. Their problems escape the attention of the elite. There are fewer organisations of women in rural areas while they disproportionately abound in urban centres. The needs of rural women for better living conditions, more educational opportunities and a happier domestic life have to be taken up on a priority basis. This is where the Sri Avinashilingam Deemed University will play a notable part. Education of women should not merely aim at improving their productivity but their status. There is a whole range of values and attitudes that determine the health, vitality and progress of a nation. The concepts of cleanliness of the environment, public health and sanitation, nutrition, home management, conservation of energy, population education, etc., are of vital importance to the growth and development of a nation. It is this task of women's education which will have a multiplier effect in society. This precisely is the message behind the saying "If you educate a man, you educate an individual; if you educate a woman, you educate a whole family".

The developmental needs of women in India as in the third world countries of the world will increasingly be seen in such priority sectors as education, employment, health, nutrition, legal status and application of science and technology. The UN Decade for Women 1975-85 worked as a strong impulse towards greater planned action for the security and stabilization of the status of women. Experience gained during this decade is being utilised to plan renewed efforts. In the decade 1985-1995 efforts will therefore have to be made towards larger entry into professions by women, both in the organised and the unorganised sectors. This would call for a wider network of human resource development programmes.

Alongside its services to girls' education, the field-based research programmes of the college sponsored by a number of national and international organisations constituted a great accomplishment. A special feature of the postgraduate curricula has included community and social service work as an organic part of their academic work. Significant studies have been undertaken by the college in nutrition through action research projects aimed at combating malnutrition among the rural population.

As I was on my way to Coimbatore earlier today, I reflected upon the priceless legacy you have inherited from those who evolved and developed the concept of field-based education. Mahatma Gandhi used to say that the soul of India resides in the villages. He therefore advocated a field-orientation to education which then was the exclusive preserve of metropolitan and selected urban areas. Free India was conscious of the need to give education a new turn. Dr. S. Radhakrishnan, one of our most eminent educationists, was therefore requested to prepare the blueprint for a rural university in 1949 on the lines conceived by Gandhiji. The principal objective of this study was to reverse the flow of rural youth for knowledge and learning into the cities, to which employment seekers flocked. In free India, it was felt higher education had to be brought to the doorsteps of villagers.

It is gratifying that this College which has done so much in and for the field is becoming a Deemed University in the year of the Centenary of Dr. Radhakrishnan's birth. This is in fact a Centenary Gift to his memory.

Dr. Radhakrishnan's blueprint for a rural university was translated into a programme of action and iven a practical shape when ten ural Institutes of higher education vere organised by the Government of India. As you are aware, the Gandhigram Institute set up by hat other dedicated soul, the late Dr. Soundaram, was one of them. And this College—now a Deemed University—follows in the same footsteps. Most of us will agree that the right setting for the universities, the temples of learning they are, should be rural, far from the madding crowd of cities. Our gurus and sages also founded centres of learning in serene, sylvan surroundings. This institution has conducted high level research in the most advanced areas and has yet combined it with humanist ideals founded on the practical and living experience of our villages.

More than anything else, this institution stresses the importance of effort. For Gandhiji, dignity of labour was an integral part of his worldly religion. Education ennobles the mind. But it must also attach due value to manual work. Gandhiji said :

> "Whatever may be true of other countries, in India at any rate where more than 80 per cent of the population is agricultural and another 10 per cent industrial, it is a crime to make education merely literary and to unfit boys and girls for manual work in after-life. Our children must from their infancy be taught the dignity of such labour."

This lesson on the dignity of labour should never be forgotten. It is a golden frame for mental attitudes and intellectual pursuits. Throughout the length and breadth of India so much has to be done, some of it by machines and with the help of scientific and technological aids, but much more with human hands which no machine can ever surpass.

I am sure this Deemed University will be able to provide a new dimension to human resource development. You will simultaneously influence the whole range of our higher education system by what you achieve.

I now have great pleasure in inaugurating this 24th deemed university. The greater freedom you acquire with the new status will make innovation and experiments more pronounced in the field of womens' education. I have no doubt that your efforts in this direction will revitalise the content and process of our system of education. ☐

The Purpose of Education

Dr. T.S. Avinashilingam, Chancellor of the Avinashilingam Institute for Home Science and Higher Education for Women in his presidential address at the inaugural function of the Institute described the purpose of education as "achievement of excellence in the academic level, integration of academic studies with service in rural areas, so that the academic studies have social purpose, and the inculcation of social, ethical and spiritual values". Excerpts

From the inception, our institutions have been inspired by the educational ideals of Sri Ramakrishna, Swami Viveknnanda, the Holy Mother and Mahatma Gandhi. The commanding presence of the Shrine in the centre of the campus and the prayers held in the mornings and evenings have been continuous source of inspiration to our students and staff.

Swami Vivekananda pointed out that while information on the arts and sciences is important and has its place in education, while imparting of skills and technology is also important in training men and women, the basic value of education rests in the laying of the foundations of strength, confidence and character in pupils. As Sri Ramakrishna said in his own unique way, "You may add zeros without number interminably, but they will have no value. But the moment you put one before it, they all become very much alive and get tremendous importance". Even so, the cultivation of strength, confidence and capacity to uphold, strive for, and achieve higher things in life should be the aim of our educational system.

To do the mighty task of rebuilding India, Swami Vivekananda wanted a hundred thousand men and women fortified with eternal faith and nerved to a Lion's courage by their sympathy for the poor, the fallen and the downtrodden, who will go over the length and breadth of our country, working for the uplift of the masses. From where will such youth come except from institutions like ours ?

To achieve this great purpose, the courses of studies in our institutions have been planned with the following objectives in view, namely, achievement of excellence in the academic level, integration of academic studies with service in rural areas, so that the academic studies have social purpose, and the inculcation of social, ethical and spiritual values. ☐

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K. Jayashankar
REGISTRAR

Jodhpur Varsity Orientation Programme

The Academic Staff College of he University of Jodhpur recently rganised the third Orientation Programme for University and College Teachers. Prof. M.V. Mathur, Ex-Vice-Chancellor of Rajasthan University, inaugurated the programme while Prof. M.L. Mathur, Vice-Chancellor, University of Jodhpur, presided over the inaugural function.

In his inaugural address Professor M.V. Mathur explained the philosophy of College Teachers' training programmes and how this concept flowered to become a reality. He stressed that educated persons were expected to be better disciplined, specially the teachers. They had to be ready to face all types of challenges in the present time. He envisaged that a very tough time was about to come for teachers in terms of their acceptability by students but hoped that Academic Staff Colleges would try to do their best to develop the professional excellence of University and College teachers.

Dr. M.L. Mathur, in his presidential remarks gave the historical background of training programme. He focussed on different objectives of the Academic Staff College and also discussed different constraints on it. He emphasised that teachers are the agents of change. They can only be made effective by a systematic and well-organised training.

The programme was of four weeks duration and the main objectives were to enable the participants to :

(i) understand the significance of education in general and higher education in particular in the global as well as in the Indian context;

(ii) understand the linkage between education and socio-cultural development with particular reference to Indian policy where secularism and egalitarianism are the basic tenets of the society;

(iii) acquire and improve basic skills of teaching at the University/College level;

(iv) understand the organisation and management of the University/College and to perceive the role of a teacher in the total system; and

(v) utilize opportunities for the development of the personality, initiative and creativity.

The course content included the following broad areas: Organisational behaviour and environmental awareness; Educational psychology, personality development and pedagogy; Professional ethics, policy making processes in education, skills required for effective teaching and research, education technology and their changing role in society, and Modern management techniques, developing reference skills, financial administration, management of student services and distance education.

Group discussions on the following subjects were also organised during the course :

1. Political Environment of Education;
2. Social Environment of Education
3. Economic Environment of Education
4. New Policy on Education, 1986
5. Problems of Education;
6. College and Community Development
7. Curriculum Planning

Prof. M.L. Mathur, Vice-Chancellor of the University of Jodhpur in his valedictory address emphasised the utility and value of such training to university and college teachers. He exhorted teachers to know their responsiblities, and added that they should evaluate constantly what they have been doing and how far have they been fulfilling the expectations of our society?

Computer Stationery and MICR Cheque Production

A two-day workshop on "Computer Stationery and MICR Cheque Production" was recently organised by the Association for Research and Development in Printing (AFRADIP), a professional association of printing and allied industries, at Madras.

Inaugurated by Shri K.T. Chary, President of the AFRADIP, the workshop covered the themes: (1) What is Computer Stationery? (2) Manufacturing process in a nuts hell, (3) High speed web offset printing machine, (4) Configuration on a web offset press-features in selection of configuration to suit Indian environment, (5) MICR cheques-method of manufacture-equipment needs-security precautions, etc., (6) Carbonless papers, and (7) Finishing operations.

Shri P. Renugopal, I.A.S. Director of Stationery and Printing, Madras delivered the valedictory address.

As many as 28 delegates drawn from government establishments, public and private sector undertakings and the industry participated in the workshop.

The AFRADIP proposes to conduct such workshops regionally at Bangalore, Hyderabad, Bombay, Bhopal and other places in future.

NSS Programmes at Gujarat Vidyapith

The National Social Service Cell of the Gujarat Vidyapith organised orientation courses for first and second year NSS Volunteers of M. D. Rural Service Colleges of Randheja and Sadara. In all 160 volunteers and 15 teachers attended the courses. The course contents included methods and skills of working with people, planning and managing work projects, effective communication, writing work reports and evaluation in support of making 'Green Gujarat'. M.D. Rural Service College, Sadara, organised special plantation programmes with the help of local youth groups of Dolarana Vasana, Madhavgad and Zakhora villages and planted 2,500 saplings. They also motivated 3 Village Panchayats, 4 Village Schools and 125 households for creating Village Forest (*Gram Van*), 'School Nursery' and 'Kitchen Gardening' projects.

Randheja M.D. Rural Service College celebrated 'Youth Felicitation' day known as 'Tarunabhinandan Din' to felicitate those entering the voting age of 21. For 1988-89 NSS Volunteers are being assigned 15 households in the village of their field placement as a part of NSS regular activities. Students will work for improvement of quality of life of the assigned families.

The Student Counselling Coordination Unit of the Vidyapith also arranged weekend monthly workshop sessions on personality development issues of the students and the academic staff. Ms. Saroj Alech, one of the eminent transactional analysts in the country, visited Gujarat Vidyapith and addressed the students and the teachers on how individuals can make their lives peaceful and cheerful by increasing self-awareness.

Satellite Research Centre

Shivaji University, Kolhapur proposes to start a cooperative research programme in satellite communication by September.

Dr. R.V. Bhosale, Chairman of the Solar Plasma Department of the Physical Research Laboratory, Ahmedabad, said that students would design an instrument which would be linked to satellite and in the event of TV transmission failure it would receive programmes which could be viewed on the screen. This would benefit low-power transmitters, he added.

One such instrument would be handed over by the Director of the Indian Space Research Organization, Mr Pramod Kale to the university and two engineering students from mechanical and electrical sections

INTER-UNIVERSITY YOUTH FESTIVALS 1988-89

Zone	Venues	Dates	Contact Cultural Coordinator
East	Sambalpur University, Sambalpur (Orissa)	Oct. 12-15, 1988	Dr. K.C. Dash NSS Coordinator Sambalpur University Sambalpur
South	Bharathidasan Univ., Tiruchirapalli Tamil Nadu	Oct. 27-30, 1988	Prof. H. Md. Salahudeen NSS Coordinator Bharathidasan Univ., Tiruchirapalli
North	C.S. Azad Univ. of Agriculture & Technology, Kanpur U.P.	Nov. 13-16, 1988	Dr. D.C. Kulshrestha Dean, Students' Welfare C.S. Azad Univ. of Agriculture & Technology, Kanpur
West	Devi Ahilya Vishwavidyalaya, Indore (M.P.)	Nov. 20-23, 1988	Dr. R.K. Dubey, Dean, Students' Welfare, Devi Ahilya Vishwavidyalaya, Indore
National	Indian School of Mines, Dhanbad	Jan. 31 to Feb. 4, 1989	Prof. R.K.S. Chouhan Dean, Students' Affairs Indian School of Mines, Dhanbad

ould be trained at Ahmedabad, he aid.

Three big radio telescopes were eing constructed at Ahmedabad, Rajkot and Surat, added Dr Bhosale.

Science Exhibition

A four-day Science exhibition was recently organized by Shri Shivaji College, Parbhani as a part of COSIP activity. Shri Raosaheb Jamkar, former Deputy Minister, Govt. of Maharashtra, in his inaugural address called upon the students to develop scientific outlook and emulate the example of Japan in the field of Scientific and industrial development. Shri Baburao Goregaonkar who chaired the function exhorted the participants to develop technology consistent with Indian conditions.

The exhibition was arranged by all participating departments of COSIP scheme. Dept. of Physics displayed items like space satelittes. electronic instruments, working of computer, etc. Dept. of Biology presented items in living world, hereditory, human diseases, and Medical uses of local plants. Dept. of Chemistry demonstrated the process of manufacturing synthetic dyes, colours and fibres.

UGC Fellowship Tenure

The University Grants Commission (UGC) is reported to have decided to raise the tenure of the UGC fellowship from four to five years. The decision will apply to all research scholars who have passed the entrance examination as on 1.1.1986.

The UGC has also taken a decision to accommodate those research fellows of Delhi University who qualified for the National Educational Test last year but were denied fellowships due to the non-availability of seats in universities.

Sacking of VCs Shocks AIU

The unceremonious removal of the VCs of the Lalit Narain Mithila, Ranchi, Patna, Bihar, Magadh, K.S. Darbhanga and Sagar Universities has come as a shock to the Association of Indian Universities. This has once again brought to light the vulnerability of the dignity and status of Vice-Chancellors. Not only such actions cause hurt and humiliation to individuals they also tend to undermine the credibility of the university system. The Association has, as a first step, constituted a fact-finding Committee of elders headed by Prof. R.C. Paul, Former Vice-Chancellor, Panjab University and President of the Association of Indian Universities. Prof. M.V. Mathur, Former Vice-Chancellor, Rajasthan University and Director, NIEPA; Prof. Rais Ahmed, Former Vice-Chairman, UGC and Vice-Chancellor, University of Kashmir and Prof. (Mrs) Vanaja Iyengar, Former Vice-Chancellor, Sri Padmavati Mahila Vishwavidyalayam, have also consented to serve on the Committee.

It may be recalled in this connection that charged, as it is, by its charter to safeguard university autonomy, the Association has been making consistent efforts to check its erosion in every possible way. It has often felt concerned at developments that have impeded the capacity of Vice-Chancellors to function efficiently for that makes neither for good management nor for the development of the university. It was in this context that a deputation of the Association had called on the Prime Minister in 1980 when the university was sought to be declared as an industry and again in 1986 when all the Bihar VCs were made to resign under duress. In its memorandum to the Prime Minister submitted in July 1980, the Association had *inter-alia* recommended the setting up of a Standing Committee on Higher Education under the Chairmanship of the Union Education Minister that could act as forum for consideration of issues dealing with the universities and other matters concerning higher education. Again in its memorandum to the Hon'ble Prime Minister submitted in 1986, the Association had sought functional autonomy for the Chancellors and the Vice-Chancellors and a fixed tenure of the office of Vice-Chancellor, unhindered by the pleasure of the Chancellor.

The developments in Bihar and Madhya Pradesh are particularly disturbing as they come against the backdrop of the government's declared intentions at 'depoliticisation of the university campuses' and 'the creation of spirit of autonomy in educational institutions' as set out in the National Policy on Education 1986.

The fact-finding Committee will not only contact the concerned individuals and authorities but will also meet other sections of society. The report of the Committee will be placed before the Standing Committee at an emergent meeting, if necessary, for its consideration and deciding upon the future course of action.

Birla Institute of Management Technology

The Birla Institute of Management Technology (BIMTECH) a wing of Birla Academy of Art and Culture, set up in Delhi, offers diploma courses in business management, financial management and control, human resource management, marketing management, international business and computer science.

Giving details of programmes and courses, Prof. C.B. Gupta, Director of the institute, said that BIMTECH had taken the lead by introducing a course in liaison and business communication, the need for which was strongly felt.

Mr. R.N. Jaju, trustee of the Birla Academy of Art and Culture said the institute would try to achieve its goals by involving top level business functionaries and policy-makers to deliver regular addresses to students, in addition to their regular teaching. With this, he felt, the students would get an exposure to both theoretical lessons and practical training. Besides, this would help them understand the Indian business conditions to better, he added.

Each programme will be of one-year duration divided into two semesters. The first semester will commence on October 3 next. It will be of 18 weeks' duration. The second semester will also be of 18 weeks' duration, after which four weeks will be devoted to a course in project planning.

Course in Data Processing Techniques

The Thapar Institute of Engineering & Technology, Patiala organised, under its Continuing Education Programme in Computer Applications, an 8-week programme on 'Data Processing Techniques'. Approved by the Department of Electronics, Government of India and sponsored by Indian Society for Technical Education (I.S.T.E.), the course content included Computer and Modern Office and Data Processing in Business; COBOL—Part I; COBOL—Part II; COBOL—Part III; Files and Program Design; System Analysis and Design Database; and Fundamentals of CAD, CAM and Spread sheet.

Earlier in July 1987 the Institute also organised an 8-week course on Programming and Programming Methodology.

Road Bridge at Highest Altitude

Col. S.G. Vombatkere, a Ph.D. Scholar of Prof. R. Radhakrishnan, Structural Engineering Laboratory, Civil Engineering Department, IIT-Madras, in the year 1987, has been awarded a Certificate by the prestigious Guinness Book of Records for the design and construction of the Road Bridge at the highest altitude of 5602m (18380 ft) in the Ladakh area. This 27m Bailey Bridge on the ice body is the first of its kind and was constructed against the expert opinion. This has been completed at a cost of Rs. 0.25 lakh in four days against the estimated cost of conventional proposal cost of 45 lakhs and completion period of 2 to 3 years.

Source : Letter dated 31 Aug. 88 from KVS Rama Rao, Chairman, Campus News Editorial Committee to Editor, U.N.

We Congratulate . . .

1. **Shri M.L. Jain, who has been appointed Vice-Chancellor of Dr. Hari Singh Gour Vishwavidyalaya.**
2. **Prof. Shivajirao Bhosale who has been appointed Vice-Chancellor of Marathwada University.**
3. **Shri Krishna Nath Chatterjee who has been appointed Vice-Chancellor, North Bengal University.**

News from UGC

INSAT-1B Programme of UGC

Between 21st September to 30th Sept., 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

21.9.88

"Mechanisms of Photosynthesis"
"Quality Controlled Concrete"
"Stone Henge"

22.9.88

"Induced Breeding"
"Semiconductors—Supplement"
"Wiring Household Plugs"

23.9.88

"Modelling Pollution"
"Timekeepers of Centuries-IV"
"Helpage India"

4.9.88

"Design and Environment-VIII : Design and Designing"
"Translating Indian Classics"
"Gestures Speak"

5.9.88

No Telecast

6.9.88

"Variations in Food Productions"
"Raw Materials—Gold"
"The Story of a Grain of "Salt-II"

27.9.88

"Chemistry of Manmade Fibres-III"
"Special Children"
"New Methods of Fracture Treatment-II"

28.9.88

"The Plant Cell Wall"
"Heat of the Earth Entrails"
"Floods & their Measurement"

29.9.88

"The Sea : Life Line for Today and Tomorrow"
"Diode & its Characteristics"
"University Round Up"

30.9.88

"Complex Numbers"
"Timekeepers of Centuries-V"
"Waste Water Disposal in Oil Refineries"

Communication

Education Vs Entertainment

Sir,

While agreeing with the warning sounded by Prof. Amrik Singh in his article on Education Vs Entertainment *(University News*, July 25, 1988*)* that unless a judicious mix is struck between the print media and the electronic media the growth of the country will be atrophied and alphabets will be used mainly for reading comics, I would like to draw theattention of the readers to a recent column in the Times of India by Shri Sham Lal on the National Scene—Slums of mind. He while discussing many hazards of education has wondered how education system as a whole is surviving, without a language. Nothing has been done, he says, to discover the potential of Hindi and other national languages to develop them by making new demands on them and to make them fit for higher education. Nor there has been a drive to promote vigorously the study of English, even though it will remain, in effect, the only link language. He says that it cannot be the aim of human resources planners to rear a dumb generation. Obviously it being not so, I feel, it has become very important to check the dominance of electronic media over the print media and also to promote vigorously the study of the link-language which is likely to remain the open sesame willy-nilly for a good career for a long long time to come.

In the meanwhile, the news of clipping the flight wings of the *operation blackboard* even before it is ready to take off in full throttle adds to the dismal picture already obtained in the field of education.

Yours etc.
V. Narasimhan
Registrar
Sree Chitra Tirunal Institute
for Medical Sciences &
Technology, Trivandrum-11

Attention Scientists and Technologists

Indian Expertise in Science and Technology

The Research Cell in Economics of Education of the Association of Indian Universities is conducting a survey of Indian expertise in science and technology in the University sector. It is proposed to prepare a comprehensive database of the skills, knowledge and facilities of the university level institutions as well as a directory of experts in various disciplines of science and technology. The survey is also intended to catalogue the expertise and current research work of Indian scientists and technologists in various fields of science and technology, and will be used as an input for the compilation of a comprehensive database on the scientific and technical manpower in the country. The database will provide a ready reference to the industry, commerce and allied sectors of Indian economy for identifying experts in the relevant fields.

The scientists and technologists engaged in teaching and research in the universities and university level research institutions in India **at the lecturer or equivalent and above levels only** are requested to fill-up the prescribed form, which can be had from the undersigned. The completed form should be returned latest by **September 30, 1988**.

The responses from the academic and research staff are solicited, and their cooperation would be highly appreciated in our venture to build up a comprehensive database.

For the prescribed form, kindly write to :

M M Ansari
Joint Director
Research Cell, Economics of Education
Association of Indian Universities
AIU House, 16 Kotla Marg
NEW DELHI 110 002

Haryana Institute of Public Administration
Chandigarh

(Society registered under Societies Registration Act XXI of 1860)

Advertisement No : 2/33-83-A (5)

The Haryana Institute of Public Administration, which is engaged in imparting training to IAS/HCS Probationers and other officers of State Services invites applications for the following post.

1. Professor in Economics and Development Planning.

Pay Scale : Rs. 4500-150-5700-200-7300 (UGC Grade).

Age Limit : Not exceeding **50 years on 30th September, 1988.**

Essential qualifications for the post are as under :

(i) Master's degree in the relevant field of study with consistently good academic record—First or high second class or B Plus in the grading system.

(ii) A Doctor's degree or published paper of high standard.

(iii) At least 10 year's experience in teaching Post-graduate classes and successfully guiding/conducting research in the relevant fields : or

At least 10 years experience as practising administrator in a senior Administrative position in the area of expertise prescribed for the post.

Applications are also invited for the post of Reader in the above mentioned faculty. These will be considered only if suitable candidate is not available for the post of Professor. A candidate for the post of Professor can also be considered for the post of Reader if he clearly opts for the same in his application. The pay scale, age limit and experience, etc., for the post of Reader will be as under :

Pay Scale : Rs. 3700-125-4700-150-5700 (UGC Grade).

Age Limit : Not exceeding 45 years as on 30th September, 1988.

Experience : At least 5 years' experience in teaching Post-Graduate Classes and successfully guiding/conducting research in the relevant fields or at least 5 years' experience as practising administrator in a Senior administrative position in the areas of expertise prescribed for the post.

Other essential qualifications for the post of Reader in above faculty will be the same as prescribed for the post of Professor.

2. Prescribed qualifications and age limit relaxable in the case of exceptionally qualified/experienced Candidates. Appointment may also be made on deputation.

3. Appointment shall be made on probation for a period of one year which can be extended by another year.

4. Appointment may also be made on contract basis for a limit period.

5. The Institute reserves to itself the right to fill or not to fill the post advertised.

6. Candidates called for interview from outside Chandigarh will be paid first class rail fare to and fro by the shortest route on production of either money receipt or ticket number or actual bus fare whichever is less.

7. Application, giving full particulars of qualifications (mentioning Division/Grade, percentage o marks obtained, year, Board/University from High School Examination onwards with copies of testimonials), Date of Birth, Experience, present pay and pay scale, details of previous employment, if any, publications (mentioning the name of publisher(s) & year of publication, names of the journals and references regarding the issues in which published in respect of papers published), with copies of transcripts o two best articles published and transcript of one or two chapters from the main publication work, should reach the Director, Haryana Institute of Public Administration : S.C.O. No. 2913-14, Sector 22-C Chandigarh, on or before **30th September, 1988.** Incomplete applications and those received after the due date will not be considered.

Note : (i) The Institute is likely to shift to its permanent campus at Gurgaon in the near future.

(ii) Housing facility will be made available by providing rented accommodation upto Rs. 1500/- P.M.

Asha Shar
DIRECT

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

RESEARCH IN PROGRESS

A List of Research Scholars Registered for Doctoral Degrees of Indian Universities

SOCIAL SCIENCES

ciology

1. Gupta Madhu. *Indore Sambhag ke nirashrit vriddhon e samaj mein badaltee huyee sthiti.* Devi Ahilya. Dr. T.R. th, Asstt. Prof., P.M.B. Gujaratit Arts and Law College, dore.

2. Jain, Nisha. *Sanskritikaran ka prabhav; ek anusuchit ti ka vaiyaktik adhyayan : Sagar Nagar ke vishesh sandarbh ein.* HS Gour. Dr. Diwakar Sharma, Department of ciology, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

litical Science

1. Jadhav, Shivaji S. *The Congress Party and peasant ovements in Maharashtra from 1930 to 1950.* Shivaji. Prof. .S. Chausalkar, Department of Political Science, Shivaji niversity, Kolhapur.

2. Kulkarni, Shrinivas Gurunathrao. *Emergence of elugu Desam : A case study.* Shivaji. Dr. K.K. Kavlekar, ead, Department of Political Science, Shivaji University, olhapur.

ducation

1. Chakravarty, Neena. *A study of differences in attitu- es of college students towards national integration in Megha- ya : Factors affecting attitudes.* NEHU. Dr. Mathew eorge, Department of Education, North Eastern Hill Uni- ersity, Shillong.

2. Singh, H.I. *A study of vocational preferences of high creative and low creative high school tribal pupils in Kohima and Mokokchung Districts, Nagaland.* NEHU. Dr. Mathew George, Department of Education, North Eastern Hill University, Shillong.

3. Sungoh, S.M. *A study of vocational education and attitudes towards vocationalisation of education in East Khasi Hills.* NEHU. Dr. Mathew George, Department of Education, North Eastern Hill University, Shillong.

HUMANITIES

Philosophy

1. Pathak, Hari Prasad. *Acharya Shankar aur Ramanuj ke Geeta Bhashyon ka tulnatmak adhyayan.* HS Gour. Dr. B.N. Sharma.

2. Siradkar, Rekha. *Samkaleen Bharatiya adhyatmavad mein paramsat ka swaroop.* HS Gour. Dr. Pratapchandra, Reader, Department of Philosophy, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

3. Tomar, Seela. *Manvendra Nath Rai ka manavatavadi chintan : Ek alochanatmak adhyayan.* Devi Ahilya. Dr. (Smt.) D.A. Goyal, Asstt Prof., Department of Philosophy, Govt. Girls' P.G. College, Moti Tabela, Indore.

Language & Literature

English

1. Jajoo, Archana. *Indian life and values in Bhattacharya's fiction.* Devi Ahilya. Dr. R.K. Sharma, Prof., Department of English, Govt. Arts and Commerce College, Indore.

2. Kasbekar, Sushama. *Interaction of plot and characters in the plays of Tennessee Williams.* Devi Ahilya. Dr. S.S. Chandel, Principal, Govt. Arts and Commerce College, Indore.

3. Ojha, Prerna. *Renaissance phenomenon in Hamlet.* Devi Ahilya. Dr. Vijay Puranik, Principal, Arts and Commerce College, Valwan, Lonavla.

4. Vijayakumar, K, *The development of study skills in English at the undergraduate level with special reference to colleges in Kerala University area.* Kerala. Prof. S. Venkitachalam Iyer, Reader, Institute of English, University of Kerala, Trivandrum.

Hindi

1. Gupta, Manoj Kumar. *Muktibodh ke kavya kee rachna prakriya ke sandarbh vastu aur roop kee dwandhatmakata ka anusheelan.* HS Gour. Dr. Virender Mohan Shukla.

2. Vijayamma, B. *A comparative study of the concept of woman in the poetic works of Jayashankar Prasad (Hindi) and Kumaran Asan (Malayalam).* Kerala. Dr. Vellayani Arjunan, Director, State Institute of Encyclopaedic Publications, Trivandrum.

Tamil

1. Baburajan, A. *Reference and biographical sources of Tamil language and literature : State of the art survey and evaluation of selective sources.* Kerala. Dr. K. Nachimuthu, Reader, Department of Tamil, University of Kerala, Karavattom.

Malayalam

1. Balagopal, B. *A critical evaluation of the works done by Prof. Elamkulam Kunjan Pillai in the field of Kerala history and culture.* Kerala. Dr. P. Ramachandran Pillai, Prof., Department of Malayalam and Hon. Director, International Institute on Kerala Studies, Kariavattom.

2. Gayathiri Devi, G. *Socio-cultural conditions as reflected in Manipravala poetry.* Kerala. Dr. P.V. Velayudhan Pillai, Prof., Department of Malayalam, University of Kerala, Kariavattom.

3. Koshy, P.J. *Rural life in Malayalam novel.* Kerala. Dr. N.K. George Onakkoor, Director, State Institute of Children's Literature, Trivandrum.

4. Kunjamma, S. *Synthetic pattern of Malayalam : A dialectic study.* Kerala. Dr. B. Sreedevi, Lecturer, Department of Linguistics, University of Kerala, Kariavattom.

5. Manju, K. S. *The cultural heritage of Trivandrum : A study.* Kerala. Dr. V.S. Sharma, Department of Malayalam, University of Kerala, Trivandrum.

6. Marykutty, A.M. *A study of Christian personal names in Malayalam.* Kerala. Dr. S. Gopinathan Nair, Reader, Department of Linguistics, University of Kerala, Kariavattom.

7. Radhakrishna Varrier, K. *Influence of folk arts in kathakali.* Kerala. Dr. N. R. Gopinatha Pillai, Reader, Department of Malayalam, University of Kerala, Trivandrum.

8. Rajeswari Amma, S. *The literary contribution of Lalithambika antharganam : A study.* Kerala. Dr. V. S. Sharma, Department of Malayalam, University of Kerala, Trivandrum.

9. Roy, P.C. *Evolution of humours in Malayalam novels : A study.* Kerela. Dr. K. Prasobhan, Reader, Department of Malayalam, Institute of Correspondence Course, University of Kerala, Trivandrum.

10. Sabita, K.I. *Theme and style in the short stories of Lalithambika Antharjanam.* Kerala. Dr. N. Sam, A.R.O., O.R.I. and M.S.S. Library, Kariavattom.

11. Sreenathan, M. *Technical terminology in performing arts of Kerala.* Kerala. Dr. E.V. Narayanan Namboothiri, Prof., Department of Linguistics, University of Kerala, Kariavattom.

History

1. Awasthi, Anita. *Siwani Jile mein samajik evam arthik jagriti ka itihas, 1920-1947.* HS Gour. Dr. B.B. Srivastava.

2. Dube, Ankleshwar. *Madhya Prant kee vyavasthapika kee adim janjatiyon tatha harijanon ke samsyaon ke prati chetana, 1921-1956.* H.S. Gour. Dr. G.S. Tripathi, Reader, Department of History, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

3. Dubey, Vineet Kumar. *Mandla kshetra mein swadheenta sangram ka itihas, 1857 se 1947 tak.* HS Gour. Dr. D.C. Sharma.

4. Girija Devi, T.P. *History of police administration in Travancore 1729-1885.* Kerala. Dr. K K. Kusuman, Reader, Department of History, University of Kerala, Kariavattom

5. Gupta, Dinesh Kumar. *Bharatiya swatantrata sangram mein Siwani Jile ke yogdan, 1920-1974,* HS Gour. Dr. B.B. Srivastava.

6. Jain, Rakesh Kumar. *Seth Govind Dass ka Bharatiya swatantrata andolan mein yogdan.* HS Gour. Dr. D.C. Sharma.

7. Mishra, Sukhdeo. *Madhya Pradesh ke prachin ganrajya: Ek itihasik sarvekshan.* HS Gour. Dr. B.N. Sharma, Prof. and Head, Department of History, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

8. Sharma, Manohar Lal. *Narsingpur jile mein swadheenta andolan, 1842-1947.* HS Gour. Dr. D.C. Sharma.

9. Sharma, Ramesh Kumar. *Madhya yugeen sant parampara mein Kobir panthi Sant Shri Ram Jee Baba ka vyaktitva evam krititva.* HS Gour. Dr. D.C. Sharma.

10. Shukla, Uma Kant. *History of education in central provinces, from 1835 to 1911.* HS Gour. Dr. M. Vishwas.

11. Tignath, Arvind Kumar. *Mahakavi Kalidas yugeen Bharatiya samajik jeevan.* HS Gour. Prof. B.N. Sharma, Head, Department of History, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

12. Tiwari, Meenakshi. *Mahabharat mein varnit nari jeevan ka itihasik sarvekshan.* HS Gour. Dr. D.C. Sharma.

13. Tiwari, Pavan Kumar. *Rewa Rajya kee sarkar evam prashasan, 1918-1948.* HS Gour. Dr. D.C. Sharma.

14. Verma, Dilip Singh. *Freedom movement in Balaghat District, 1857-1947.* HS Gour. Dr. M. Vishwas.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities.

SOCIAL SCIENCES

Psychology

1. Azfar, Sayeed Uddin Mohammed. *Effects of understanding resource, depletion and response consistency on cooperative behaviour of children.* Utkal.

2. Pandita, Sushma. *Antecedents of achievement motivation and its intrinsic and extrinsic components.* HP.

3. Shreekant Singh. *A study of educational choice of arts and science college students of upper and lower socio-economic groups.* Magadh.

Sociology

1. Arora, Anand. *Problems of women in higher jobs.* Panjab.

2. Kamala Rao, P. *Juvenile delinquency in Hyderabad : A study in urban ecology.* Osmania.

3. Pathak, Avijit. *Contemporary youths and their world-view : A sociological study of youths in two comparative settings of Calcutta University and Jawaharlal Nehru University.* JNU. Dr. J.S. Gandhi, Centre for the Study of Social Systems, Jawaharlal Nehru University, New Delhi.

4. Sharma, Hira Lal. *On some aspects of rural out-migration,* BHU. Prof. S.N. Singh, Ex-Prof., Department of Statistics, Banaras Hindu University, Varanasi.

Social Anthropology

1. Dash, Rabinarayan. *Neoliths of Orissa : A study on late stone age.* Utkal.

Political Science

1. Chattopadhyay, Sibranjan. *The office of the Governor in the Indian Federal set up.* Calcutta.

2. Choedon, Yeshi. *China, The United Nations and major conflict-situations in Asia.* JNU. Prof. K.P. Saksena, Centre for International Politics, Organisation and Disarmament, Jawaharlal Nehru University, New Delhi.

3. Jain, Usha. *Jaindharam mein rajnaitik vichardhara : Somdev Suri ke vishesh sandarbh mein.* Durgawati. Prof. B.C. Dubey, 1310 Naiper Town, Jabalpur.

4. Mahavir Singh. *Soviet view of the Indian Congress.* JNU. Prof. Devendra Kaushik, Centre for Soviet and East European Studies, Jawaharlal Nehru University, New Delhi.

5. Pastaria, Manju. *Organisation, administration and working of banks in India with special reference to M.P.* Bhopal. Prof. N.A.K. Nausha, Department of Political Science, Govt. College, Sahore.

6. Sharma, Satish Kumar. *Politics of land reforms in Haryana.* Panjab.

Economics

1. Bandyopadhyay, Paritosh. *Cooperative farming in India : A search for an ideal.* Calcutta.

2. Chakravarty, Banda. *Literacy schooling and child labour with special reference to Andhra Pradesh.* Andhra.

3. Chunkapura, Paulson M. *Techniques of monetary control and the efficacy of monetary policy in India.* CUST. Dr. K.C. Sankaranarayanan, Head, Department of Applied Ecomonics, Cochin University of Science and Technology, Cochin.

4. Das, Radha Krishna. *Collective bargaining in Indian steel industry : A study at Rourkela and Jamshedpur.* Berhampur. Dr. B.S. Murty, Reader, Depertment of Industrial Relations and Labour Welfare, Berhampur University, Berhampur.

5. Dey, Bijoy Kumar. *Village planning and development in a block frame : A case study of Nepura Village.* Berhampur. Dr. N.B. Pradhan, Department of Economics, Berhampur University, Berhampur and Dr. B.N. Das, Prof., Department of Economics, Berhampur University, Berhampur.

6. Gupta. Virendra Kumar. *Export finance in India.* Rajasthan. Dr. M.D. Agarwal, Department of Economic Administration and Financial Management, Kota Open University, Kota.

7. Jat, Dhanna Ram. *Marketing of agricultural produce in Rajasthan.* Dr. M.D. Agarwal, Department of Economic Administration and Financial Management, Kota Open University, Kota.

8. Joshi, M.V. *Problems and prospects of labour in construction industry in private sector : A study in the context of Saurashtra Region.* Saurashtra. Dr. B.D. Parmar.

9. Maheswara Rao, Veeranki. *Economic analysis of milk production in a delta village of Andhra Pradesh.* Andhra.

10. Mathur. Trilok Narain. *Industrial relations in Posts and Telegraphs Department.* Rajasthan. Dr. M.K. Mast, A-113, Janta Colony, Jaipur.

11. Mehta, Jaisukhlal Kantilal. *Public utility corporations in M.P. : An analytical study since 1971.* Devi Ahilya. Dr. V.D. Nagar, Head, Department of Economics, Devi Ahilya Vishwavidyalaya, Indore.

12. Neena, K.P. *Benefit cost analysis of investment in irrigation in Kerala.* Calicut. Dr. P.P. Pillai, Prof. and Head, Department of Economics, Dr. John Mathai Centre, Aranattukara, Trichur.

13. Sahoo, Kasturi. *Socio-economic conditions of educated working women of Orissa, for the period from 1951-1981.* Sambalpur. Dr. G.N. Das, Reader, Department of Economics, Sambalpur University, Burla.

14. Sharma, Ravindar. *Productivity and optimisation of resource use in tea farming in Himachal Pradesh.* HP Krishi. Dr. T.V. Moorti, Department of Agricultural Economics, College of Agriculture, Palampur.

15. Singh, Khangembam Menjor. *Cooperative movement in Manipur since independence.* Manipur. Prof. M. Iboton Singh, Department of Economics, Manipur University, Imphal.

Law

1. Bairwa, Prahlad. *Samudar vidhi mein nouvahan kee swatantrata.* JNU. Prof. R.P. Anand, Centre for Studies in Diplomacy, International Law and Economics, Jawaharlal Nehru University, New Delhi.

Public Administration

1. Qadir, Mohammed Abdul Habeeb. *Postal administration in the Hyderabad State under the Nizams.* Osmania.

Education

1. Bhusari, Chandrashekhar Vasantrao. *Intelligence of scheduled caste and scheduled tribe students and its correlation with their scholastic achievement in Vidarbha.* Nagpur. Dr. G. S. Parasher, Department of Education, Nagpur University, Nagpur.

2. Goud, A. Sai Baba. *Eye health education for class rooms and community.* Osmania.

3. Singh, I.M. *A comparative study of creative and non-creative B.Ed. pupil teachers in relation to teaching effectiveness, self-concept and some personal values in M.P.* Bhopal. Dr. Didar Singh Jhaj, Asstt Prof., Govt. College of Education, Bhopal.

4. Thomas, V.D. *A study of the organisation and effectiveness of a humanistic classroom.* Baroda.

5. Victor, Dondapaty. *A study of the dynamics of the problem facing non-formal education centres in Srikakulam, Vizianagaram and Visakhapatnam Districts of Andhra Pradesh.* Andhra.

6. Vyas, S.G. *Construction and standardisation of the Hindi language ability test for the entrants to the standard eleven : General stream of higher secondary schools of Saurashtra Region.* Bhavnagar. Dr. M.D. Trivedi.

Commerce

1. Abol Fazl, G.M.J. *Industrialisation of Khorasan, Iran.* Calicut. Dr. Moosa A Baker, Prof. and Head, Department of Commerce, University of Calicut, Calicut.

2. Batra, K.L. *Problems and prospects of tourism in Rajasthan.* Rajasthan. Dr. A.K. Singh, Prof. and Director, College of Commerce and Management, Sukhadia University, Udaipur.

3. Dan, Sandipkumar. *Study of Bengali indigenous accounting practices.* Calcutta.

4. Dhotra, Jagdish Raj. *Workers morale in public and private undertakings in Jammu and Kashmir.* Jammu. Dr. M. M. Misra, Department of Management Studies, University of Jammu, Jammu.

5. Koirala, Parashar Prasad. *Sales promotion policies and practices in the manufacturing industries of Nepal.* Delhi.

6. Mansoori, Sheikh Sikandar. *Sagar Jile kee krishi mein mausami berojgari.* HS Gour. Dr. B.K. Jain, C/o Head, Department of Commerce, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

7. Pal, Kartik Chandra. *Effect of inflation on foreign participation.* Calcutta.

8. Puntambekar, Gangadhar. *Bharatiya videsh vyapar mein chaye evam kahava kee niyati, pravrittiyon ka adhyayan, 1975-85.* HS Gour. Dr. H.C. Sainy, Dean, Faculty of Commerce, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

9. Sharma, Bhuvnesh Chandra. *Material management in Jammu and Kashmir Road Transport Corporation.* Jammu. Dr. N.S. Gupta, Head, and Dr. L.C. Khullar, Reader, Department of Commerce, University of Jammu, Jammu.

10. Shettigar, Jagdish. *Indian shipping in overseas trade : Its growth, problems and prospect.* IIT Delhi. Dr. A.L. Agarwal, Department of Humanities and Social Sciences, Indian Institute of Technology, New Delhi.

11. Viswanadham, M. *The problems and prospects of financing the small scale industrial sector by commercial banks in West Godavari District, Andhra Pradesh.* Nagarjuna. Dr. P. V. Krishna Rao, Department of Commerce, Nagarjuna University, Nagarjunanagar.

Home Science

1. Sakherwade, Nisha H. *A study of food practices and problems of tribals in Bhand District.* Nagpur. Dr. (Mrs) Asha B. Nimkar, Department of Home Science, Nagpur University, Nagpur.

Business Management

1. Guha, Asim Kumar. *Attitude towards technology transfer and related factors.* IIT Delhi. Prof. (Mrs) Purnima Mathur, Department of Humanities and Social Sciences, Indian Institute of Technology, New Delhi.

2. Sharma, Narendra Mohan. *The theory and practice of industrial democracy in India.* Rajasthan. Dr. R.B. Upadhyaya, B-38 Prabhu Marg, Tilak Nagar, Jaipur.

EDUCATION NEWS INDEX

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CHOICE OF NEW V.Cs. *The Indian Nation* 4 Aug. '88.

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JAMIA MILLIA (Ed). *National Herald* 31 Aug., '88.

EDUCATION & POLITICS

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Bhogle, A.D. What have they done to reward merit ? *Deccan Chronicle* 7 Aug. '88.

Dasgupta, R.K. Authority and the teacher. *Amrita Bazar Patrika* 21 Aug., '88.

Dasgupta, R. K. Modern teaching and research. *The Statesman* 13 Aug. '88.

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Shamsuddin. A new teaching tool. *National Herald,* 12 Aug. '88.

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SCHOOLS FOR SCANDAL (Ed). *The Hindustan Times* 22 Aug '81.

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BOOKS & LIBRARIES

Avanija, K.K. Libraries have a multi-dimensional role to play. *The Hindu* 22 Aug. '88.

Mohinder Singh. Looks in libraries. *National Herald* 16 Aug. '88.

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Gupta, Vijay. Ancient roots of Indian Sports. *The Assam Tribune* 14 Aug. '88.

Parameswara Ram, N. Play determines the personality of a child. *The Hindu* 2 Aug. '88.

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Joshi, Uma Education for disabled. *The Economic Times* 7 Aug. '88.

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CLASSIFIED ADVERTISEMENTS

INDIAN SCHOOL OF MINES
DHANBAD-826004

No- 420004/88-Estt. Dated : 29th August, 1988

1. The Indian School of Mines, Dhanbad, deemed to be a University under the UGC Act, invites applications for recruitment to Seven posts of Professors, Seven Posts of Assistant Professors, Four posts of Lecturers, & One post of STO as below :

Department/Centre	Post	Specialisation/Background
Centre for Mine Environment	* Professor-two	General Environment/Physical Environment. Mining Engg. with Rock Mechanics & Slope Stability or Physical Environment.
	* Asstt. Prof.-two	General Environment/ Cultural & Social Environment.
	* Lecturer-two	Physical Environment/Public Health or Human System Engg.
Fuel & Mineral Engg.	Professor-two	(i) Fuel Engineering (ii) Mineral Engg/Coal preparation.
Petroleum Engineering	Professor-One	Petroleum Engineering
Applied Geology	* Lecturer-One	Geostatistics/Computer Geology/ Ore Geology/Sedimentology.
Electronics & Instrumentation	Lecturer-One	Telecommunication/Instrumentation/Micro-processors.
	Sr. Technical Officer-One	Microprocessor based Control/ Instrumentation.
Applied Geophysics	Professor-One	Gravity & Magnetic Methods / Geophysical Signal Processing/ Seismic and/or Well Logging Methods for oil exploration.
Engg. & Mining Machinery	Professor-One	Mechanical Engg.
Dept. of Mining Engg.	Asst. Prof.-One	Mine Environment
Applied Science	Asstt. Prof.-Two	Mathematics. * Analytical Chemistry/Mining Chemistry/Ceramics
Humanities & Social Science	Asst. Prof.-One	Social Sciences/Proficiency in teaching of some foreign languages like German/Russian/French will be preferred.
Industrial Engg. & Management	Asstt. Prof.-One	Industrial Engg. and Operations Research.

* Posts are temporary, likely to be permanent.

2. Qualifications

(A) Professor

An eminent scholar with published work of high quality actively engaged in research with ten years experience of teaching and/or research of which five years should have been as Assistant Professor or in a position of equivalent responsibility. Experience of guiding research at Doctrol level.

OR

An outstanding **Engineer/Technologist** with established reputation who has made significant contribution to knowledge/engineering practice.

(B) Assistant Professor & Senior Technical Officer

(a) Good academic record with a Doctorate Degree in a relevant field; provided that candidates not possessing Ph.D. may be considered if they have to their credit equivalent research published work or design/development work of high order either in an institution or in an industry of repute.

(b) About five years experience of teaching and/or research and development, of which three years should have been as Lecturer or in a position of equivalent responsibility.

(c) Evidence of having been actively engaged in research or innovation of teaching methods or production of teaching materials.

OR

In the case of posts of **Engineering subjects**, candidates from the industry or professional fields should possess good academic record with recognised professional work of about seven years.

(C) Lecturer (in Engineering disciplines) :

(a) Master's degree in appropriate field.

(b) Consistently good academic record with a bachelor's degree in ngineering/Technology. First Class t Bachelor's and/or Master's level.

(C) One year's relevant professional xperience outside academic/research nstitutions.

Provided that having regard to the equirements of emerging fields and of developing inter-disciplinary programmes, the requirement of Engineering/Technology degree may be waived in the cases of candidates otherwise well qualified.

Provided further that if a candidate who does not possess one year professional experience aforesaid or the Master's degree is appointed as a Lecturer, he shall be required to obtain the desired professional experience/ Master's degree within a period of five years of his appointment, failing which he shall not earn future increments until he has fulfilled the said requirements.

OR

(D) **Lecturer** (in Science / Applied Science/Humanities/Social Science)

(a) A doctorate degree or research work of equally high standard.

(b) Consistently good academic record with 1st or high 2nd class (B on the seven-point scale). Master's or equivalent degree in relevant subject.

Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in subjects of relevance.

Provided that if the Selection Committee is of the view that the research work of a candidate (as evident either from his thesis or from his published work) is of very high standard, it may relax any of qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctorate degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (suitable weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation, on the condition that he will have to obtain a Doctorate degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he shall not earn future increment until he fulfils the said requirements.

3. Pay and Allowances and Age Limit

Post	Upper age limit	Scale of Pay (Rs.)	Salary (Rs.) of Min. of pay scale	Salary (Rs.) of Max. of pay scale
Professors	50 yrs.	4500-7300	5150.00	8123.00
Asstt. Prof.	40 yrs.	3700-5700	4350.00	6461.00
Sr. Tech. Officer	40 yrs.	3000-4500	3560.00	5150.00
Lecturer	35 yrs.	2200-4000	2616.00	4650.00

A higher start in the scale may be given in special and deserving cases, Upper age limit relaxable in respect of candidates otherwise considered suitable.

General Information

(i) Detailed information and prescribed application form may be had free of-charge from Dy. Registrar, (General), Indian School of Mines, Dhanbad, by sending a self-addressed envelope (of size 30 cm × 12 cm) duly affixed with stamps worth Rs. 7.00.

(ii) Application in the prescribed form complete in all respects should reach the Dy. Registrar (General) on or before **30-9-1988.**

(iii) In case suitable candidates are not available appointments may be made in immediate lower posts.

(iv) Those who applied in response to our earlier advertisement for any of the posts need apply again.

(v) Canvassing in any form will be treated as disqualification.

A. Sarkar
REGISTRAR (Actg.)

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

COCHIN-682 022

No. Ac. A1/441/88-89.

Dated : 17-8-88

Admission Notice—1988-89

B. Tech. (Polymer Science and Rubber Technology)

Applications are invited for admission to the 3 year B.Tech. Degree course in Polymer Science and Rubber Technology.

Eligibility : B.Sc. degree of any of the universities in Kerala or equivalent thereto, with Chemistry main and Physics and Mathematics as subsidiaries or Physics main with Chemistry and Mathematics as subsidiaries or Physics, Chemistry and Mathematics as main, with 55% marks in the optional subjects taken together. Scheduled Caste/ Scheduled Tribe candidates are eligible for all concessions as per rules including relaxation of 5% marks in the qualifying examination.

Selection : Eligible candidates will have to appear for a written test and an interview in Cochin at their own expense. Final selection will be on the basis of the marks secured by the candidates in Chemistry, Physics and Mathematics at the qualifying examination, in the written test and interview. Admission will be governed by rules of reservation applicable to professional courses in the university.

Note : Upto 20% of the seats of the B.Tech. (Polymer Science and Rubber Technology) degree course are reserved for candidates sponsored by public/private sector industries or research and development establishments in the field of polymers. Only candidates with at least 3 years experience in the field after B.Sc., will be considered in this category.

Request for application form and prospectus should be addressed to the Head, Department of Polymer Science and Rubber Technology, accompanied by a self-addressed envelope (25x27 cm) stamped for Rs. 3.80 along with a crossed postal order for Rs. 60/- payable to the Head, Department of Polymer Science and Rubber Technology at Cochin-22 Post Office. Completed application should reach the Head, Department of Polymer Science and Rubber Technology, Cochin University of Science and Technology, Cochin-22 on or before **30 September, 1988.**

V.J. Pappoo
REGISTRAR

PUNJABI UNIVERSITY
PATIALA

Advt. No. 37/Rect/PRO

Applications are invited for the following posts so as to reach the Assistant Registrar (Estt.) by **September 24, 1988.**

1. Professors : One each in the Departments of Sociology & Social Anthropology, Commerce, Anthropological Linguistics and one in Economics at Regional Centre, Bhatinda.

Specializations

Sociology & Social Anth : Desirable : Evidence of work in Punjabi and research work on Punjabi Society.

Anth. Ling : Any aspect of Punjabi Linguistics.

Economics : Modern Economic Theory.

Commerce : Post-graduate degree in Commerce and/or in allied subject. Specialization in any area of Commerce or Business.

2. Readers : One each in the Departments of Sociology & Social Anthropology, Education & Community Services, History (Correspondence Courses) and Guru Gobind Singh Department of Religious Studies.

Specializations

Sociology & Social Anth. : Desirable: Evidence of work in Punjabi and research work on Punjabi Society.

History (CC) : Indian History.

G.G.S. Deptt. of Rel. Study : Specialization in Christian Studies. Proficiency in Christian theology and a religious tradition other than Christianity.

3. Lecturers : One each in the Departments of Russian, Education & Community Services, Human Biology (leave vacancy).

Specializations for Human Biology : Human Genetics/Population Genetics.

Note :

1. Candidates who have already applied for the posts of Professor & Reader in Sociology & Social Anthropology, Reader and Lecturer in Education & Community Services and Lecturer in Russian, need not apply afresh. They may, however, supply additional information, if any.
2. The Vice-Chancellor could also place before the Selection Committee names of suitable persons for the posts of Professors.
3. It is not obligatory to call for Interview every candidate who possesses the essential qualifications.
4. The number of vacancies may change.
5. Candidates must possess working knowledge of Punjabi.
6. The Selection Committee might relax the qualifications/experience in exceptional cases.
7. The teaching posts carry the revised UGC pay-scales and the applicants [should possess the qualifications prescribed by the UGC, which will be supplied alongwith the application forms.

Application forms can be obtained from the Head of the University Publication Bureau on payment of Rs. 5/- at the counter **OR** by sending an IPO for Rs. 5/- in favour of the Registrar, alongwith a self-addressed envelope (25x 10 cms) with postage worth Rs. 5.50 superscribing on it Application for the post of————————.

REGISTRAR

JAMIA MILLIA ISLAMIA
NEW DELHI-110025

Advt. No. 7/1988-89

Dated : 1-9-1988

Applications on the prescribed form which can be obtained from the Registrar's Office on any working day between 10 : 00 a.m. and 12 : 00 Noon or by sending a self-addressed and stamped Re. 1/- envelope of 10x23 cms. are invited alongwith a Crossed Indian Postal Order or Bank Draft for Rs. 7/- (Rs. 2/- for SC/ST candidates) for the following posts so as to reach the Registrar by 1 : 00 p.m. on **22.9.1988.** The posts are in the Academic of Third World Studies, Jamia Millia Islamia. The Academic has recently been established and is a research institution, concerned with the problem of Third World Countries.

Knowledge of Hindustani particularly Urdu is desirable, though not essential.

D.A., C.C.A., H.R.A., P.F., Gratuity, Pension and other benefits will be given as per Jamia rules.

Relaxation in any of the qualifications may be made on the recommendation of the Selection Committee in exceptional cases.

1. Three Professors (Rs. 4500-7300)

An eminent scholar with published work of high quality and actively engaged in research. About ten years' experience of teaching and/or research. Experience of Guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Specialisation

1. Comparative Economic Development with knowledge of the Economic experience in India together with that of one or more of the following regions : East Asia, West Asia, Latin America.
2. Social Sciences with knowledge and experienee of Third World issues.
3. International Relations and History of National Movements with special interest in Asia and Africa.

2. Two Readers (Rs. 3700-5300)

Good academic record with a Doctoral degree or equivalent published work. Evidence of being actively engaged (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position.

This condition may be relaxed in the case of candidates with outstanding record of Teaching/Research.

ecialisation

1. International Economic Relations.
2. Sociology/Economics with knowledge of socio-political process and social transformation.

. Three Research Associates

Research Associateships carry moluments in the following four slabs :

1. Rs. 2200-100-2700.
2. Rs. 2700-100-3200.
3. Rs. 3200-100-3700.
4. Rs. 3700-125-4325.

The slab to be offered to the selected candidates will be recommended by the Selection Committee according to merit.

Every candidate should be preferably below the age of 45 years with a doctorate degree and published research work to his or her credit and have already shown evidence of independent research work. In the case of women candidates, the age limit is 55 years. The duration of the Associateship will be tenable initially for a period of three years extendable for another term in the same slab for a period not exceeding two years. House rent allowance, medical facilities, leave and other conditions of Associateships will be governed by the rules of U.G.C./J.M.I. as amended from time to time.

4. Six Junior Research Fellows

In Social Sciences, Economics/History & Political Science with familiarity with data processing and analysis.

The candidates must have qualified in National Level Tests (U.G.C., U.G.C.-C.S.I.R. Joint) GATE and such other tests which are recognised by the U.G.C. as equivalent to National Level Tests from time to time.

The value of Junior Research Fellowship would be Rs. 1800/- per month for the first two years. At the end of two years the Fellowship is subject to assessment of the work done by the fellows. The fellowship will be withdrawn, if the work is not considered satisfactory. The fellowship for the third and subsequent years will be Rs. 2100/- per month. House rent allowance, medical facilities, leave and other conditions of Fellowship will be governed by the rules of U.G.C/J.M.I. as amended from time to time.

Note : (1) The number of vacancies given in the advertisement above are liable to be changed without notice by the Jamia.

Khwaja M. Shahid
REGISTRAR

TRIPURA UNIVERSITY

P.O. AGARTALA COLLEGE
AGARTALA, TRIPURA-799004

Advertisement No. 1/Est./88

Dated : 30th August, 1988.

Applications are invited for the posts of :

(I) Secretary, Faculty Council for Post-graduate Studies;
(II) Deputy Registrar;
(III) Deputy Controller of Examinations;
(IV) Assistant Registrar;
(V) Assistant Controller of Examinations;
(VI) Deputy Finance Officer;
(VII) Audit Officer;
(VIII) Deputy Librarian.

Scale of Pay

For posts Nos. (I), (II), (III), (VI) and (VIII) is Rs. 1,200-50-1,300-60-1,900.

For posts Nos. (IV), (V) and (VII) is Rs. 700-40-1,100-50-1,600.

Qualifications

For posts Nos. (I), (II) and (III).

(a) **Essential** ; (i) Uniformly good academic record with at least B+ (50%) Master's Degree or its equivalent.

(ii) At least 10 years' experience in a position involving supervision, control and planning of examinations, administration of colleges or in an Institute of higher learning or Govt. or other academic bodies. At least 5 years of the 10 years' experience should be in a position of gazetted/equivalent rank.

(b) **Desirable** : A doctorate degree or experience of at least 10 years in a senior position in an academic institution like a college or a university or a research organization.

Relaxations: The above qualifications may be relaxed in the absence of suitable candidates having their administrative experience, if the candidate has been either a Professor or a Reader or a Principal of a College for at least 2 years. The essential qualifications pertaining to administrative experience required for the post may be reduced by a period of 3 years on the recommendation of the Selection Committee. For candidates having the required administrative experience, the essential academic qualifications may be relaxed on the recommendation of the Selection Committee but the selected candidates must have at least the academic qualifications prescribed for teachers of Colleges.

For posts Nos. (IV) and (V).

(a) **Essential** : (i) Uniformly good academic record with at least B+ (50%) Master's Degree or its equivalent.

(ii) At least 7 years' experience in a position involving supervision, control and planning of examinations and/or administration in University/Colleges or in an Institute of higher learning or Govt. or other academic bodies.

Relaxations : The essential qualifications pertaining to administrative experience etc. required for the posts are relaxable by a period of 2 years in the case of employees of the Tripura University for whom the Bachelor's Degree of any University shall be the minimum academic qualification.

For post No. (VI).

(a) **Essential** : (i) Bachelor's Degree with good academic record.

(ii) 10 years' working experience in management of finance in a Govt./University/Commercial Establishment of repute.

(b) **Desirable**: Membership of the Institute of Cost Accountants or Chartered Accountants or possessing a Degree or Diploma from a recognized Institute of Management or passed SAS or equivalent examination.

For post No. (VII)

(a) **Essential** : (i) Bachelor's Degree with good academic record.

(ii) Experience in Auditing of Govt./University/Commercial Accounts for at least 5 years in a position involving supervision, and management of Audit and Accounts.

(b) **Desirable** : Membership of the Institute of Cost Accountants or Chartered Accountants or possessing a Degree or Diploma from a recognized Institute of Management or passed SAS or equivalent examination.

For post No. (VIII).

(a) **Essential** : (i) Uniformly good academic record with a B+ (50%) Master's Degree in Library Science or a B+ (50%) Master's Degree followed by a Bachelor's Degree in Library Science.

(ii) At least 10 years' experience of working in a senior position in a Library of repute preferably in a University or in an Institute of higher learning.

(b) **Desirable** : (i) A Doctorate Degree or published research work of merit.

(ii) Knowledge of at least one foreign language.

Minimum age for the posts (I), (II), (III), (VI) and (VIII) is 35 years and for posts (IV), (V) and (VII) is 30 years.

Other things remaining the same preference will be given to S.T. candidates, if available.

The appointment shall, in the first instance, be made on probation for one year which may be extended for another year at the discretion of the appropriate authority of the University. During or at the end of the period of probation, the services of the Officer(s) concerned may be terminated with one month's notice or with one month's salary in lieu thereof, without assigning any reason. On satisfactory completion of probation incumbent(s) concerned shall be eligible for confirmation in service. The choice of the Selecting Authority need not necessarily be confined only to those who apply.

The candidates should submit four copies of their applications within **30 September, 1988** in plain paper giving the relevant information with a crossed I.P.O. of Rs. 10/- (Rs. 2.50 for SC/ST candidates) in the name of Tripura University.

VICE-CHANCELLOR

BRITISH SCHOLARSHIPS IN ENGLISH LANGUAGE TEACHING : 1989-90

Applications are invited for approximately 12 training awards made available by the British Government for specialisation in the teaching of English at British educational institutions. Each award consists of air-fares to and from Britain, course fees and a monthly maintenance allowance.

Applicants should be teachers or teacher-trainers in English who possess a good academic record, at least a second-class MA in English and specialist qualifications in English Language Teaching at least at the level of post-graduate diploma. They should not be over 45 years of age on 1st January 1989. Preference will be given to those on the teaching staff of universities, colleges, teacher-training institutions and higher technical institutions and with evidence of research or innovatory work in ELT and involvement in English-improvement projects including development of ELT software and materials will constitute additional qualifications.

The applications should be sponsored by the institution where in the candidate is employed with an undertaking by the institution that the candidate, if selected and sent abroad, would be utilised on his return for the specific project for which he was sent.

Selected applicants will normally be placed on one-year post-graduate courses at British Universities commencing at the end of September 1989. The duration of scholarships cannot normally be extended. Those who already possess high qualification (such as a doctorate) may, if selected, be placed on a shorter course of about 3 months. Those who have already been abroad for comparable study/training/specialisation will not be considered.

Forms of application can be had on request (with self-addressed unstamped envelope of 23 cm × 10 cm superscribed "Applications for British Scholarships in ELT") from any of the following : Desk Officer, Language Division, Desk-IV (L), Department of Education, Ministry of Human Resource Development, Shastri Bhawan, New Delhi 110 001. The British Council Division, AIFACS Building, Rafi Marg, New Delhi 110 001; The British Council Division, 5 Shakespere Sarani, Calcutta 700 001; The British Council Division, Mittal Tower, 'C' Wing, 2nd Floor, Nariman Point, Bombay 400 021; and the British Council Division, 737 Anna Salai, Madras 600 002.

Last Date for supply of application forms **23 September, 1988** For receipt of completed applications **3 October 1988.**

The completed applications be sent to the **Desk Officer, (Desk-IV (L), Language Division, Department of Education, Ministry of Human Resource Development, Shastri Bhawan, New Delhi 110 001.**

davp 511(44)88

BUREAU OF INDIAN STANDARDS

OPENINGS FOR ENGINEERS/TECHNOLOGISTS/SCIENTISTS

Bureau of Indian Standards, successor to the Indian Standards Institution is the statutory body set up under an Act of Parliament for Development of Standardization and Quality Systems in the country. The Bureau offers excellent career opportunities in various scientific and technological disciplines for bright, young and dynamic personnel for appointment as

ASSISTANT DIRECTOR (SYSTEM SCIENTIST-A)

No. of Posts—About 50 as per details given below :

Sl. No.	Discipline	Approximate No. of posts
1.	Electronics/Computer Sciences/Electrical Engg/Applied Physics	15
2.	Statistics/Quality Systems/Operational Research	5
3.	Mechanical Engg/Metallurgy/Textile Engg/Physics/Agricultural Engg	15
4.	Civil/Structural Engg	5
5.	Chemistry/Chemical Engg/Agritultural Chemistry/Agronomy/ Textile Technology	10

NOTE : Usual number of posts are reserved for SC/ST candidates.

Qualifications

A University Degree in Engineering or Technology in the respective discipline or Post Graduate Degree in Statistics/Agronomy/Chemistry/Physics/Applied Physics/Mathematics/Operational Research/Agricultural Chemistry or equivalent with not less than 60% marks (50% for SC/ST candidates).

Age limits—21-27 years as on 30.9.88 (upper age limit relaxable by 5 years for SC/ST candidates and as per rules for ex-servicemen).

Career Prospects

Technical/Scientific personnel of the organization are covered under a Flexible complementing Scheme as applicable to Scientific Departments. Time-bound promotions based on performance and assessment upto the level of Director (Selection Grade)/System Scientist-E. Residency of Five years at each level that is Assistant Director, Deputy Director, Joint Director and Director.

Important Service Conditions

1. Pay and Allowances

(a) Pay Scale—Rs. 2200-75-2800-EB-100-4000

(b) Allowances—Dearness Allowance, Compensatory (City) Allowance, House Rent Allowance, Benefits of Pension, etc., similar to those enjoyed by the Central Government Employees. Total emoluments (at the minimum of Rs. 2200) : Rs. 3146 (in 'A' class cities and slightly less in other cities).

2. Surety Bond—A candidate on appointment shall have to furnish a surety bond for serving the Bureau for a minimum period of three years. If he decides to leave the service before completion of three years of employment, he shall be required to reimburse the Bureau six months' emoluments last drawn unless he has worked for a shorter period in which case he shall be required to reimburse the full amount, drawn by him.

3. Probation—2 years.

4. Age of Retirement—60 years.

5. Postings and Transfer

(a) Posting—Any where in India.

(b) Transfer—Normally after every three to six years depending upon exigencies of work.

6. Benefits in Service

(a) Leave—As admissible to Central Government Employees.

(b) Leave Travel Concession—(i) Home Town : Once in a block of two years. (ii) Anywhere in India : Once in a block of four years (in lieu of LTC for Home Town).

(c) Leave Encashment—15 days in a year

(d) Medical Benefits—Covered under the Central Government Health Scheme and where the Scheme does not exist, benefits as admissible to Central Government employees under the Central Civil Services (Medical Attendance) Rules.

7. Death-cum-Retirement Benefits—Pension and General Provident Fund; Gratuity; Encashment of Leave as per rules. Benevolent Fund and Deposit Linked Insurance on death while in service only.

Selection

Eligible candidates will be required to appear in a written examination, to be conducted by the Bureau, at any of the following centres at their own cost :

BOMBAY, CALCUTTA, DELHI, HYDERABAD AND MADRAS.

Candidates should indicate the Centre at which they will like to appear for the exam.

Candidates shortlisted on the basis of marks obtained in the examination, will be required to appear for personal interview at New Delhi for which travelling expenses upto second class train fare for to and fro journeys from normal place of residence by shortest route payable. Appointment will be subject to the candidate being found medically fit by the Competent Medical Authorities.

How to Apply

Candidates must apply on the prescribed form of application obtainable from the Director (Personnel Management) Bureau of Indian Standards, 9 Bahadur Shah Zafar Marg, New Delhi-110 002 by sending a crossed postal order for Rs. 5.00 in favour of BIS payable at New Delhi post office and a self addressed unstamped envelope of the size of 23 × 10 cms. Those in service (Government, Public Undertakings/Enterprises, Autonomous Organizations, etc) should apply through their employers or with their written consent. The completed application along with crossed Indian Postal Order for Rs. 40.00 payable to Bureau of Indian Standards at New Delhi Post Office (No fee for SC/ST candidates) and attested copies of certificates relating to age, caste, qualifications, experience, etc. should reach **the Director (Personnel Management) Bureau of Indian Standards, 9 Bahadur Shah Zafar Marg, New Delhi-110 002 by 30th September, 1988.**

Manipur Varsity's Special Convocation

SPECIAL CONVOCATION
FOURTH CONVOCATION

Dr. (Mrs.) Kapila Vatsyayan (right), Secretary, Department of Arts, Ministry of Human Resource Development, delivered the Convocation Address at the Manipur University. Seen on her right are Gen. K.V. Krishna Rao (Retd), Governor of Manipur & Chancellor and Prof. K.J. Mahale, Vice-Chancellor of the University.

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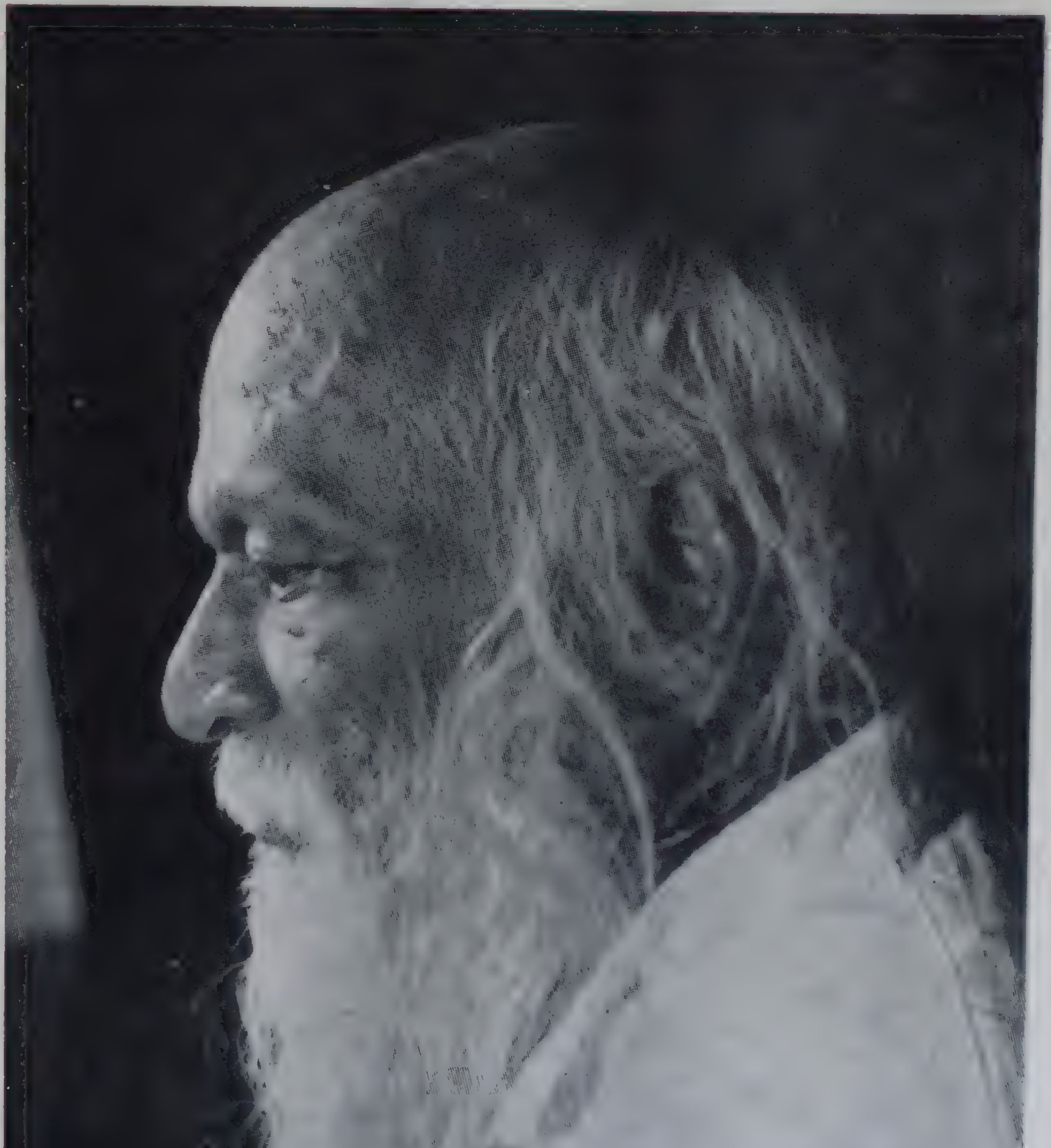

KARMAVEER BHAURAO PATIL
1887—1959

"Education Through Self-help is Our Motto"

—*Karmaveer*

THE
RAYAT SHIKSHAN SANSTHA
SATARA

(Maharashtra)

Founder : Padma-Bhushan Karmaveer Bhaurao Patil, D. Litt.

Established : 1919 **Registered : 1935**

CONDUCTS

*	**SENIOR COLLEGES** (Including Engineering, Law, Education, Science, Commerce & Arts)	29
*	Secondary & Higher Secondary Schools (Including Technical, Agricultural, Commerce	326
*	Junior Colleges of Education	8
*	Panchayat Rajya Training Centre	1
*	Cosmopolitan Hostels	81
*	Pre-primary and Primary Schools	22
*	Ancillary Institutions — Printing Press, Co-operative Stores, Bank, etc.	41

Students : 2,85,000 **Employees : 12,900**

The Rayat Shikshan Sanstha, right from the beginning has devoted itself to the great task of imparting education to the rural masses, irrespective of caste, creed, sect, with a view to inculcating essential values such as self-reliance, freedom, equality, fraternity, democracy, secularism, emotional and national integration, dignity of labour, etc.

Subhashchandra Bhosale
SECRETARY

4 OCT 1988
C. F. T. R. I., MYSORE

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Editor :
SUTINDER SINGH

Karmaveer Bhaurao Patil

In dedicating this issue of **University News** to the memory of Bhaurao Paigaunda Patil, we honour a Karmayogi in the true sense of the term. He had an incisive understanding of the social ills that beset his times. His association with the Satya Shodhak Samaj, Mahatma Phule's movement against ascedency of Brahmanism and social inequalities, brought to him the realisation that lack of education and constructive efforts to mould the minds of children lay at the roots of the social and economic inequality in society. Karmayogi, that he was, he charted his own path to challenge the hegemony of upper castes and for creation of an environment where caste as a habitual pattern of behaviour was not allowed to affect social and other intercourse. He set up hostels for students where he not only laid special emphasis on admission to untouchables but also insisted on simultaneous admission of students of all other castes and classes. The inmates of the hostels were made to live a common family life forgetting traditional caste distinctions. Not only that, he insisted on every inmate of his hostels to do manual work inculcating in them the dignity of labour. By accepting gifts for his hostels, he involved the entire community in his projects, and instilled in them a sense of dignity that they were not accepting charity by sending their wards to Bhaurao's hostels for free board and education.

The hostels were set up in big towns in Proximity of the schools and colleges where students from rural areas converged for studies. The bulk of the rural population was thus untouched. To effect total social transformation, Bhaurao resolved to carry education to the door-steps of the rural population. He set up institutes for training of teachers for primary schools and as the teachers became available, the opening of voluntary primary schools in rural areas followed. Bhaurao set up as many as 578 primary schools which were later taken over by the Government. He then turned his attention to secondary and higher education. In his life time Bhaurao set up 36 hostels, 6 training colleges, 108 secondary schools and 3 colleges of higher education and some ancilliary institutions. His instrument for this achievement was the Rayat Shikshan Sanstha that he set up in 1919. Bhaurao was endowed with the gift of creating a band of workers devoted to his cause, and this alone accounts for the continued success of the Sanstha which today maintains 8 training colleges, 319 secondary schools, 29 colleges and 83 hostels besides other ancilliary institutions with over 2.5 lakhs student beneficiaries.

It was his programme of mass education of rural people that brought him close to the community that bestowed on him the title, Karmaveer—a man of action, which he truly was. The Government also honoured him by awarding Padama Bhushan in recognition of his contribution to rural education. There were numerous other honours that he picked up on his way to glory. But the most enduring tribute to his monumental work are the hundreds of institutions run by the Rayat Shikshan Sanstha.

SOME TRIBUTES

TO

KARMAVEER BHAURAO PATIL

"Karmaveer Bhaurao Patil lived in the service of the motherland. Through his selfless work he ranks among the builders of modern Maharashtra and modern India."

—Prime Minister, Rajiv Gandhi

"One remarkable feature of Bhaurao's personality was his success in creating a band of workers who have devoted their life to the cause of rural education."

— Shri Yashwantrao Chavan

"It is an unique institution and deserves support of every man who cares for the best interest of this nation. Every credit is due to my friend Bhaurao Patil."

—Dr. B.R. Ambedkar

"There is need of continuing the task begun by Karmaveer Bhaurao Patil of inculcating patriotism and communal harmony among the children of weaker section of society."

—Dr. Balram Jakhar
Speaker, Lok Sabha

"Karmaveer Bhaurao Patil has sacrificed his whole life in raising this grand superstructure in which literally hundreds of poor and backward boys and girls have found their salvation. Founder has paid special attention to the students from the scheduled castes, many of whom have beeen sent to foreign countries for education."

—Dr. Punjabrao Deshmukh

"Karmaveer Bhaurao Patil was deeply distressed by the misery and injustice that he saw round him, and his chief pre-occupation throughout his life was to help the depressed and the poor to improve their conditions."

—Dr. D.R. Gadgil

"I have had many opportunities of meeting Karmaveer Bhaurao Patil and have been impressed with his vision and resourcefulness and his remarkable achievements in spreading education in the countryside."

—Dr. John Mathai

DIGNITY OF LABOUR

Karmaveer Bhaurao Patil's Philosophy of Education

P.G. Patil

Karmaveer Bhaurao Patil (1887-1959) was a great educationist and national integrator of the 20th Century. He had his secondary education at Kolhapur where he came into close and fruitful contact with Rajarshi Shahu Maharaj. He was deeply influenced by the Maharaja's deep love and concern for the all round uplift of the masses in his State. The Maharaja had opened a number of Boarding Houses for students of various communities at Kolhapur. He also tried hard to eradicate untouchability in his State by precept and practice.

Karmaveer Bhaurao left his school in the Pre-Matric class. Later he worked in collaboration with the Kirloskars, the Ogles and Mr. D.B. Cooper, but somehow this work didn't interest him long. He left Cooper in 1922 and set up home at Satara. He had made a tryst with destiny to carry the torch of education to the nooks and corners of Maharashtra. His first step was the starting of a cosmopolitan Boarding House (Chh. Shahu Boarding House) at Satara in 1924. It was christened at the hands of Mahatma Gandhi in February, 1927. Gandhiji was deeply impressed by the cosmopolitan nature of this Boarding House as also by the Karmaveer's bold experiment of "Earn and Learn."

Karmaveer Bhaurao advocated 'education through self-help' or 'Earn while you Learn'. All the students in his Boarding House had to do some manual labour on the Boarding farm at Dhanini's Garden at Satara. The students grew crops and vegetables there. The crops were tended lovingly by the boys. There were two wells in the Garden which supplied sumptuous water to the crops. They also looked after the cattle in the farm. Each student had to put in at least a couple of hours' labour in the farm every day.

The boys constructed simple huts on the farm where they lived. Boys from all castes and creeds were admitted to this Boarding House. No servant was employed here. All the work was done by the students themselves. The boys used to cook their food themselves. There were different clubs which used to cook by turns. It was simple, spartan fare.

Thus they lived together, cooked together and dined together. An atmosphere of happy camaraderie prevailed everywhere. Gandhiji and Sayajirao Maharaj saw this novel experiment personally and paid glowing tributes to Karmaveer Bhaurao for his bold initiative and resourcefulness.

The boys thus earned their education by the sweat of their brows. Begging for food was strictly eschewed. The boys imbibed the valuable lessons of selfhelp, self reliance, and dignity of labour.

The Maharaja Sayajirao Free & Residential High School was started at Satara in June, 1940. The Manual Labour Scheme was cperated here in right earnest. The late Hamid A. Ali, the then Collector of Satara, on the eve of his retirement, asked Karmaveer Bhaurao for a choice gift. Anna asked him to donate to him the hill-side at the foot of the historic Ajinkyatara Fort. The boys from the High School worked here in the evenings. They levelled the hill-side in terraces. To-day the 'Samadhi' of the Karmaveer is situated here, and the Central Office of the Sanstha stands here on a commanding height. The Manual Labour Scheme is seen at its best here.

The Chh. Shivaji Free & Residential College was started at Stara in June, 1947. No fees were charged but the students had to put in 4 hours manual labour every day in return for which they got their College education as also their meals.

This novel experiment in higher education was conducted by Karmaveer Bhaurao Patil for 4 years, costing the management a net deficit of about Rs. 2.00 lakhs. From 1952 day scholars were admitted here, but the Hostel students continued to earn their education the hard way. If they put in 4 hours work daily, they would have earned their education as also their meals free.

The boys had to work in the College Vegetable garden; sinking a well for irrigation near the College, construct a swimming tank and assist the masons on the College buildings as unskilled labourers. Some sturdy boys broke the stones and prepared the road-metal (खडी). A boy was paid Annas three per hour. He was given a Loan Scholarship (Mrs. Laxmi Patil Fund) of Annas 3/- and the College gave him Annas 3/- as fee concession. Thus he earned Annas 9/- per hour of work. Normally the boys worked for 4 hours a day and 6 hours on Saturdays and Sundays. This enabled them to earn their meal charges and College education too. No boy should be deprived of higher education because of his poverty. 'Rub your hands with the land. Earn your education by the sweat of your brow' was the message of the Karmaveer.

That is why his appeal to the Government was : 'Give me wasteland and I will turn it into the best land'. Hence he was always keen to acquire plots of land near his Schools and Colleges where his students could work and earn their education. The Bombay Government had donated about 100 acres of alluvial land in the Devapur Tank-bed in the Man Taluka of Satara District where the students of the Shivaji College worked in the vacations and grew foodgrains enough to last them for the entire year. Karmaveer Bhaurao succeeded in enlisting the cooperation of the Tata Board of Rural Reconstruction, and with this help built up a network of Schools, wells, wind mills, a mobile dispensary, animal husbandry etc. This useful work is continued here even today in the nine adjoining villages located in the chronic famine prone area.

A Sheep breeding farm was also started at Pingli Block in this area.

Chhatrapati Shahaji Maharaja of Kolhapur donated a spacious campus of 130 acres alongwith the buildings therein to the Rayat Shikshan Sanstha in 1949-50. Karmaveer Bhauro Patil started a Primary Training College, a Secondary School, both residential and a Hostel for the Juvenile Delinquents. The students had to put in manual labour for a couple of hours every day. Jowar, bajra, groundnuts etc., were grown here, and they were used for the School kitchen. Thus we see that Karmaveer Bhaurao Patil always had the principle of self help, self reliance and dignity of labour firmly embedded in his heart.

He was influenced by Mahatma Gandhi's Wardha Scheme of Education. But it may be stated that he had operated the Manual Labour Scheme in his Shahu Boarding House—some 10-12 years before the inception of this Scheme. Sayajirao Maharaj observed while visiting the Boarding House in April 1933, "Not even a Maharaja would be able to run such an ideal Boarding House. No praise is too great for h work". And Gandhiji, nine days before his crue assassination in New Delhi wrote in his autographe message, "Shri Bhaurao Patil's educational work is veritable pillar of fame unto him."

Karmaveer Bhaurao conceived and implemente his Scheme of 'Earn & Learn' years ago. The Bomba Government introduced its EBC Scheme from Jun 1959 (concession in fees to children whose parents annual income was less than Rs. 900/-.) The lat Shri Balasaheb Desai was the then Education Minister. He was a close friend and admirer of Karmavee Bhaurao Patil. When Anna was lying on his death bed in the Sassoon Hospital, Poona, early in 1959, he proudly explained to him his Government's new EBC Scheme. He expected a pat on his back from Anna. But instead of a pat, he received a severe rap on his back. Said the anguished Karmaveer, "Balasaheb, never give anything as a free gift. It is never appreciated. It is likely to be misused. And if you give this EBC concession to students, they will tend to shirk hard work. Your Scheme will wreck my manual labour Scheme. Under my Scheme, only those who put in manual labour are given free education. I don't approve of your Scheme at all. Kindly excuse me".

Anna's words proved prophetic. The EBC scheme has almost supplanted the Manual Labour Scheme in the Colleges of the Rayat Shikshan Sanstha. During the last 28 years, it has been our sad experience that the number of students availing themselves of the Manual Labour Scheme has dwindled steadily. Today Shivaji College, Satara and Dhananjayrao Gadgil College of Commerce, Satara have about 40 students each enrolled in this scheme. The number of students in the College rolls is more than 2500 each.

In addition to manual labour scheme, provision was made for part-time employment of some boys in the College/Sanstha's Central Offices, in the Press, etc. A modest dairy and a flour mill are run by the students of the Shivaji College. Some boys also work as unskilled labourers on the College/Hostel buildings. I am happy to say that this manual labour has not affected the academic progress of the students. Rather, it has acted as a spur to greater endeavour on their part. Many of these students who have come up the hard way are working today as Life Members, Principals, Professors, Head Masters and Teachers in the Sanstha's Schools and Colleges. Today the Sanstha runs 326 High Schools and 29 Colleges affiliated to

Bombay, Poona and Shivaji Universities. The total annual budget is Rs. 34 crores.

The Sanstha had acquired what is known as the Wadala Farm—about 160 acres—in the Nagar District. Students from the neighbouring High Schools of the Sanstha used to work on this farm and thus earned their education. Recently an ambitious Horticultural Project is being operated on the campus of Annasaheb Awate College at Manchar in the Poona District. Fruit-trees are planted on an arid mountain-side area of about 50 acres donated by the Maharashtra Government to the College. The experiment was started by Principal P.A. Panwal with the cooperation of his colleagues and students.

The Karmaveer's novel experiment of self reliant mass education had attracted the attention of many people during his life time. He called on the late Madhavrao Scindia of Gwalior and requested him to donate his ancestral palaces at Jamgaon and Shrigonda in the Ahmednagar District to the Sanstha for its educational work. The Maharaj was pleased to donate the said palaces alongwith the outlying lands—about 1,300 acres to the Sanstha. Today we run a High School, a Hostel at Jamgaon and a full fledged College also at Shrigonda. The students are encouraged to put in manual labour here too.

Karmaveer Bhaurao's insistence on Manual Labour had a salutary effect on the minds of the pupils. It was the common experience of many parents in rural areas that their wards taking English education in Schools in the Cities (and also in rural areas) developed a liking for white-collar jobs in Government service and a dislike for manual work and contempt for the Harijans who usually were condemned to do such despicable jobs. Karmaveer Bhaurao wanted to fight this evil effect of the English education and of the hierarchical society in India. He also wanted to develop a sense among the Hostel inmates that work of any kind, however low or dirty has a dignity of its own as it teaches a sense of equality of all human beings. Secondly, the doing of such low and mean manual labour developed the students' moral courage and confidence that he would be able to earn his livelihood under the most distressing circumstances. It also inculcated in the pupils dignity of labour and self reliance and self respect, so valuable in his later career.

Karmaveer Bhaurao had read a biography of Booker T. Washington in his youth and was deeply influenced by Washington's noble experiment of 'Earn and Learn' at his Tuskegee Institute. Booker T. Washington emphasised education of the head, hand and heart. Thus we see a continuous line running from Booker T. to Bhaurao P.

Thus 'Education through Self help' may be regarded as Karmaveer Bhaurao's greatest contribution to the philosophy of applied education in our country.

Karmaveer Bhaurao' philosophy of education and the means he used for creating a unified India Society seem to be better interpreted by Paulo Freire, the Brazilian educationist, in his 'Pedagogy of the Oppressed ! Freire describes the situation in which a radical humanist—liberator has to play his role as an educationist. Karmaveer Bhaurao, like Freire, knew that the 'wretched of the earth' were immersed in the Indian variety of the 'Culture of Silence'. Karmaveer Bhaurao's method of bringing about a transformation of society in his day was what Freire calls 'Praxis—Reflection and Action', the ultimate aim being the liberation of the weak and the dispossessed seed—by stopping the dehumanization of society by the oppressors.

Through the unity and organization of the younger generation of all castes and creeds, Karmaveer Bhaurao brought about a Cultural Synthesis. He was like an Indian Christ serving the downtrodden in our villages.

It may be truly said of Karmaveer Bhaurao Patil that 'art of dust he made us into men'. 'Self help, Self respect, Self study and Self liberation' was his four fold programme of action.

Prof. D.G. Karve, Vice-Chancellor, University of Poona : Court Meeting of the University.

'I am referring to Karmaveer Bhaurao Patil as our Guru with deliberate intent. His role as master of educationists did not lie in teaching any subject. It lay in the much higher region of instructing the teachers by precept and example, in the purpose and mission of education. This is the message of the whole life of Karmaveer Bhaurao whom this University considered it a privilege to count among its Doctors.'

Dr. D.R. Gadgil on Karmaveer Bhaurao Patil's mission (from his Foreword to Dr. Matthew's life of Karmaveer Bhaurao Patil).

"For the country at large his work is valuable at least in two important directions. Firstly, he has given practical demonstration over years of a fruitful, perhaps the only effective approach in the long run, to the key problem of a society dominated by the hierarchy of caste. To denounce caste or to deny caste is easy enough; in certain circles, in closed coteries or interest groups, it may even appear as if caste has, at least temporarily lost its influence. All this is superficial and self-deceiving. What is important is to recognise it for the living and potent force that it is and to bring up the younger generation, at least partly in an environment where they see caste purposefully and habitually ignored; it is only such open and deliberate effort conducted over a length of time that could slowly eradicate the conscious and the unconscious effects of caste on our society. It is a great thing to have had the demonstration of these efforts of Karmaveer Bhaurao and to realise, in particular, that they have been made in the rural mass medium which ultimately is the medium in which all our efforts have to be proved.

Secondly, Karmaveer Bhaurao has shown how it is possible to build, what is virtually, a system of rura education from the primary stage to the University which, on the one hand, requires no more State aid o assistance than is available today, and which no only retains the educand in the country environmen but also inculcates in him habits of manual work an self help. It is generally agreed that the mai characteristics required in an Indian System of rura education are precisely those which have bee prominent in Karmaveer Bhaurao's pattern. And th great merit of his achievement is that it has bee accomplished with no special advantages of money o birth or power, and that it has shown itself capable of being replicated in varying circumstances."

Karmaveer Bhaurao was essentially a practical idealist. While not given to theoretical formulations he had an uncanny ability to find practical solutions to each problem and yet make no compromises which will take him away from his main purpose. In Maharashtra he is today the personal embodiment of a great tradition holding forth a message of vibrant hope. □

Arts & Commerce College, Pimpari,
Pune 411 017

Est. 1983

No. of Students : 608

Shri R.K. Shinde
PRINCIPAL

Role of Karmaveer Bhaurao Patil in Social Transformation

S.D. Patil

On 9th May 1988, the Government of India issued a Postal Stamp in honour of a great Social Reformer and the Educationist of Maharashtra, Karmaveer Bhaurao Patil. The occasion was the Birth Centenary of the leader who lived between 22nd September 1887 and 9th May 1959. The gesture, thus, was commemorative.

This is, of course, not the only honour the man received in recognition of his services. In past, he was felicitated and honoured in several ways and by several organisations including the governmental and semi-governmental institutions. Among these honours 'Karmaveer'—the Hero of Work—was, perhaps, the greatest title conferred on him by the people of Maharashtra. He was also honoured with President's award "Padma Bhusslan" and D. Litt. (Honoris Causa) by the Poona University. He is however lesser known outside Maharashtrh. It is hoped this will be partially offset by the issuance of the commemorative stamp in his honour and this special number of *University News* which will familiarise the University community all over India with the thoughts and deeds of Karmaveer.

Karmaveer Bhaurao Patil was born on 22nd September 1887 in a small village in Kolhapur District of Maharashtra State. It is interesting to note here that this man, who later turned out to be a renowned educationist and radical social reformer, was born in a hard orthodox family of Jain community where religion was considered to be extremely sacrosanct and all beliefs, rituals and customs emanating from it had almost numbed the faculty of reasoning in the minds of the community. Bhaurao, however, refused to bow before the religious dictates. He fought against the caste based distinctions and such other fanatic customs which were beyond reason or logic.

"Some people are born great" it is said, and Bhaurao belonged to that class. This is because the progressive and reformist stance of Bhaurao was evident right from his school days. Although he was born and brought up in the orthodox culture and during schooling he was kept in a segregated Jain Hostel, where administration and rules strictly conformed to the traditional religious and communal faith and following, he seemed to have been totally out of it like oil immiscible with water. In fact, he was so firm in his progressive convictions even in his young days that he holdly refused to obey the rules which were based on communal considerations. Actually, his revolt against such rules cost him his seat in the Hostel—he was expelled.

Bhaurao believed that the genesis of the social evils, such as, inequality, caste-based distinctions between man and man, undesirable traditions and superstitions lay in the ignorance of the masses. He, therefore, decided to devote his entire life for the cause of emancipation of masses through education and founded the Education Society which he named as "The Rayat Shikshan Sanstha". He realised that education was the monopoly of the few affluents in the Society and very large section of the Society, inhabiting the rural areas, was totally deprived of the opportunity. Hence, he started and conducted the mission of taking education to those whom it never used to reach—to the village folk.

The policies Bhaurao planned and implemented in the conduct of this mission and entire efforts he put in to reach the goal go to reveal the mind and mettle of this man, so also, the philosophy of education that he contemplated. They show, how he was uneasy over the poverty of the masses, how he was pained to see the discriminations in the Society, how he was bent upon removing the artificial barriers between man and man, or one social group and the other. In short, he was keen to effect the social transformation which he rightly thought could be achieved through education of the vast ignorant section of the Society—the masses. But, the education he contemplated and pursued was not the ordinary routine type of exercise, as he was aware of the shortcomings in the system of education then prevailing. The education he envisaged was for giving ability to earn, for defeating traditionalism through intellectualism, for removing inequality by advocacy of equality and for condemning white-collarism by teaching the dignity of labour. He, therefore, prepared the model of his institution to suit these objectives.

Bhaurao began his mission by starting his educational society, the Rayat Shikshan Sanstha, in 1919 in a small village "Kale" in Satara District. Soon, however, in 1924 he shifted the headquarters of his Sanstha to the District headquarters at Satara. In the beginning the nature of work undertaken by the Sanstha was not that of an institution that imparts education, but, of running a Hostel for the village boys coming to Satara for education. In the year 1924 there were just 4 inmates in the Hostel. But, their caste-wise classification speaks a lot about the philosophy and the mettle of the founder. Of these 4 inmates there were 2 Maratha, 1 Jain and 1 Mahar (untouchable) by caste. Later in the year 1927, this Hostel was named after the name of the then King of Kolhapur State—Chhatrapati Shahu Maharaj, who was known to be a staunch advocate of social equality and was a great promoter of Education for the backward communities. The naming ceremony was graced by the Father of the Nation, Mahatma Gandhi. Mahatmaji was then so much impressed by this work that he praised Bhaurao in the words which deserve quoting here. He said, "Bhaurao, you are doing something here which I have not been able to do at Sabarmati, as yet." Thereafter Mahatmaji, in appreciation of the work of his Sanstha, used to give annual financial assistance from the funds of Harijan Sevak Sangh for many years.

In 1935, Bhaurao registered his Sanstha under the Societies Registration Act 1860. Chh. Shahu Boarding (Hostel), started with just 4 inmates, gradually, grew both in number of additional inmates and also with the additions in the castes living together. The first Triennial Report of this Hostel was published in 1939. One paragraph of this Report is worth reproducing here as it highlights the aims of the Sanstha and its attempts to achieve them. The para reads : "The Chhatrapati Shahu Boarding, the unique in India, is a model institution which is blotting out and effacing the most un-natural distinctions created between man and man and, thus, has been paving the way for real unification of India. Out of 177, the present number of inmates of the Boarding, 57 are Marathas, 21 allied castes, 2 Brahmins, 6 Jains, 13 Muslims, 39 Mahars, 16 Mangs, 15 Chambhars, 5 Ramoshis, 2 Dhors and 1 Nat. All these children are brought up as children of one family, staying, dining, working and living together a disciplined life."

This experiment of Bhaurao was not only unique, but, it was revolutionary as well, as it was an open challenge to the traditionalism and casteism that had intoxicated the Indian Society, almost to the state of madness. There may be few others who were also uneasy over such sorry state of affairs in the Society but Bhaurao alone could have the courage to wage an open fight against it.

The most touching part of this experiment is that all the boys coming to his Hostel were not coming on their own but many of them were made to come by Bhaurao himself. Bhaurao used to move from village to village, select and collect the boys from the poor families of different communities, persuade their parents and bring the boys to the Hostel for their education. In short, to collect the dusted starving children in rags from villages, clean them, feed them, educate them and, finally, win them the place in the class of intellectuals, social workers or higher-ups, had been his programme. The boys so collected were of various castes and colours—from untouchables to Brahmins—and they were made to live a collective life of one family in the Hostel. Under such equality-prone scheme how can one expect the caste-based distinctions or unrealistic individual inequalities to survive at all ? And that is why one has to say that the work of Karmaveer Bhaurao Patil for the cause of social transformation was radical and revolutionary.

Another equally important feature of this Hostel was that the inmates were made to live on self service. They used to clean their rooms and verandas, wash their own clothes, prepare their own food and eat turn by turn on the principle of division of labour. The dignity of labour was, thus, inculcated in them right from the childhood.

The Sanstha, during the course of time, opened additional Hostels on the lines of Chhatrapati Shahu Boarding. Besides these Hostels, Bhaurao also started the Hostels for Court-committed boys and the destitute children.

Upto 1935, the Sanstha had a limited sphere and restricted nature of work of running Hostels for students and inculcate in them the values involving humanity, fraternity, equality and dignity of labour. However, Bhaurao was quite aware that this work had its limitations. He knew that his Sanstha was till then helping only those few needy students who could afford to come to cities for education and the large bulk of rural masses still remained unattended either because of their poverty or on account of their indifference to education, born out of their traditional ignorance. He, therefore, decided to take education to the huts of masses and arouse in them the interest for education.

Voluntary Schools

In 1931, the percentage of literacy in Maharasthra was just 8%. Mass education atleast on primary level was, therefore, the need of the day, and the opening of primary schools on a large scale in villages was the remedy to meet this need. But, the difficulty was the shortage of adequate number of primary school teachers to work in villages. Bhaurao, therefore, started, in 1935, one Training College at Satara to train the primary school teachers and it is running till today in the name, "Mahatma Phule Training College". This was the first venture of Bhaurao's Sanstha in the actual imparting of education. Later on, the Sanstha opened additional Training Colleges to train more and more primary school teachers to meet the need of village schools. "Produce teachers on one front and open the primary schools in the villages on the other front" was, then, the campaign undertaken by this great leader with utmost devotion and zeal.

To open the schools in villages was not an easy task then. There were no roads, no means of communication to reach the villages. Karmaveer had to tread plains, hills and valleys and he did it bare footed. He had to convince the village folk of the importance of education and to collect funds from them to open and run schools with local cooperation. And he did it successfully. Although the task was extremely difficult, Karmaveer Bhaurao achieved tremendous success in this mission with sheer devotion and perseverance. By such toiling efforts he could open as many as 578 voluntary schools in the different villages. Amazing work indeed !

Secondary Schools

The education at primary level was not adequate enough to raise the standard of village life in the fast developing world. It needed secondary as well as higher education to create confidence and competence in them. He, therefore, took next step of opening secondary schools in villages. The first such school was started in 1940 and it was named after Maharaja Sayajirao Gaikwad, the then King of Baroda. It is noteworthy here that Bhaurao's Sanstha preferred to open such secondary schools in rural areas and not in urban places. Here also, he received ample response from the people. Bhaurao could open as many as 108 secondary schools during his life time. Another remarkable achievement !

Higher Education

Bhaurao's next step was to bring the portals of higher education within the reach of the poor masses; and starting of the College at Satara in 1947 was the first venture in this direction. It was not, again, the ordinary type of institution. It had to suit his philosophy. At its commencement, therefore, he announced, "This College will be free and residential—free because the poor village students won't afford to come here by paying fees, and residential, because we will like to work on them and develop in them the social awareness and the sense of dignity of labour. We do not want to produce white collars from this College." It was, again, an amazing announcement. Amazing because the people then thought that it was an impracticable idea. But, Bhaurao's resolute will won't deter him from any programme or project, practicable—impracticable, which, he thought, would serve the cause of the upliftment of the downtrodden. He, therefore, implemented the scheme at least initially for some years. Bhaurao opened two more Colleges before taking final breath.

Education through Self help

Education based on manual labour was the part of Karmaveer's philosophy of education. No student should be denied the opportunity of education on account of his poverty. Karmaveer, therefore, introduced the novel scheme in his system—"Education Through Self Help". Karmaveer had dual intention in advocating this philosophy. Self supporting education for the needy student is the one, and the inculcation of the sense of dignity of labour and thereby helping to reduce the traditional gulf between the white collared educated elite and the working class in the Society, on the other. "You come, you earn and you learn" was, in brief, the nature of this Scheme. The poor students coming for education were made to support their education by working in this scheme. The work involved the manual labour in agriculture, gardening, building construction, road repairs, sweeping, cleaning and other menial work in Schools, Colleges and Hostels. The scheme proved to be a boon to the have nots, as they used to come without a farthing in their pocket and leave with University Degree in their hands.

People's faith in Bhaurao was so complete and deep that the Rayat Shikshan Sanstha, which he founded, could profusely flourish even after his death, which is evident from the present figures of its branches, with 8 Training Colleges, 326 Secondary Schools, 29 Colleges, 81 Hostels and several other ancillary institutions with student beneficiaries numbering about 2,70,000.

Spheres other than Education

Although Bhaurao Patil is mainly known as an Educationist of great vision, his other contributions to the social transformation is equally distinguished.

He was a fervent follower of Mahatma Jyotirao Phule, the great Social Reformer of 19th Century, and an active worker of his organisation, "Satya Shodhak Samaj". The movement of Samaj was aimed against social discrimination, traditionalism, religious ritualism, domination of upper communities over lower-ones and captive state of women. Bhaurao Patil used to move from village to village canvassing for the movement of Satya Shodhak Samaj, attending its gatherings and giving roaring speeches thereat.

Fighting for the removal of untouchability and also for the rights of the un-privileged and under-privileged was another part of Bhaurao's life's mission. He was, naturally, associated with several organisations engaged in the eradication of untouchability. Even, the then Bombay Government had nominated him as the Member of the Advisory Board for Backward Class Welfare and also had recognised his Sanstha as one of the voluntary agencies making efforts to eradicate the evil of untouchability. Karmaveer used to hold gatherings in the rural areas, conduct social and cultural centres and social workers' training camps to help this cause.

The poverty of rural people was also found to have engaged the attention of Bhaurao Patil as he seemed to have worked for the economic improvement of the rural people, through teaching the farmers the modern techniques in agriculture, forming cooperative societies, etc.

Thus, Karmaveer Bhaurao Patil was a complete leader endowed with vision, compassion, courage and drive. His contribution to changing the face of rural Maharashtra is unparallelled in history. ☐

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KARMAVEER BHAURAO PATIL
A Pioneer Among Pioneers

Devdatta Dabholkar

The 'Uneducated' Educationist

It was a unique occurrence. Four Vice-Chancellors in the State of Maharashtra were almost simultaneously taking charge as Vice-chancellors and paying their heartfelt respects to the memory of Karmaveer Bhaurao Patil. Three of them were the products of the institutions which the Karmaveer had established. As they and many others who later in their careers reached the top positions, were to admit openly on many public occasions: 'If it had not been for Anna (Karmaveer's dear name to his near ones), for ought we know, we would to-day have been tending cows and buffaloes till to-day'. The fourth Vice-chancellor had from his childhood been educated in Satara, the headquarters of Karmaveer's work and had missed joining the Karmaveer's Rayat Shikshan Sanstha as a member of the staff by the margin of a single day. The present author was the fourth Vice-chancellor and while paying his respects to Karmaveer he had said, 'I am proud that I joined the Deccan Education Society—founded by Lokmanya Tilak among others of great renown—but I am also sorry that I missed the opportunity of joining the Rayat Shikshan Sanstha.' The year was 1975.

Four of us were humbly paying our tributes to a man who in this context and by the general standards could be considered to be almost uneducated. Karmaveer got his primary education in the schools of those villages and towns where his father was transferred from time to time as a humble Government servant. When he had finished the fifth standard in the Marathi school he was sent in 1902 to Rajaram High School, Kolhapur where English was also taught. Karmaveer, however, did not do well in his school studies and went up to the pre-matriculaiion class only with difficulty. There is an interesting story about how Shahu Maharaja, the very strongly-willed Maratha ruler of the State of Kolhapur tried to intervene for promotion of Karmaveer (then only a Bhau) to the higher class and of how an humble but equally strong-willed Brahman school-teacher, one Mr. Bhargavrao Kulkarni gave a point-blank 'No' as a reply with the remark : 'I would rather promote the wooden benches in my class than this boy who has secured even out of two hundred marks.'

The matter ended there. This episode is however, interesting for more than one reason. It shows the courage of a simple primary teacher. It also shows the magnanimity of the strong-willed ruler of the State, who could have taken any action against the teacher in those days, and yet appreciated the courage of the teacher and even promoted him. Lastly, but of great importance to our present theme is the failure of the then educational system to educate properly even a boy of the Karmaveer's sterlihg qualities of head and heart and of leadership. Our educational system allowed many blossoms to go to the dust in those days—and who can say that there is any difference now.

The Karmaveer's life mission was to so strive that things could be different from what they were in the provision of educational opportunities for all the under-privileged groups.

An Educationist with a Difference

He tried to do this with a difference. That is why he has carved out a special niche for himself even among other distinguished pioneers in the field of education. And these are not small names by any national or even international standards, Mahatma Jyotiba Phule, Chhatrapati Shahu Maharaj of Kolhapur State, Lokmanya Tilak, Gopal Krishna Gokhale, Maharshi Karve, Dr. Babasaheb Ambedkar are some of those stalwarts. We need not review the work done by them and their other colleagues and peers, but need here concentrate only on the distinctive features of Karmaveer's work. An even more important thing is that most of these distinctive features still remain distinctive to this day.

The Karmaveer's work started in the Ninteen-twenties. All the pioneers in the field of education in Maharashtra, mentioned above (with the exception of Dr. Ambedkar who was very young at that time) had already left their firm footprints in the field, indicating the directions in which one could and should move. What could, therefore, any one entering the field much later than these pioneers, do in the field of thought and action, beyond imitating them?

The Karmaveer showed that there were problems which still remained untackled and that there was scope for fresh approaches and experiments.

Beyond Caste and Religion

The Karmaveer was a Jain. Even if he had started educational institutions for Jains alone he would have been recognized as an educationist. To this day there are educational institutions which are willy-nilly caste or religion oriented. It indicates the secular national spirit of the Karmaveer that he never for a moment thought of working for a particular caste or religion. The Jains were strict observers of untouchability as the Brahmins but the Karmaveer started his students' boarding house, admitting one untouchable boy and the first triennial report of the Rayat Shikshan Sanstha for the years 1935 to 1938 mentions the number of inmates as 188—of whom 57 were Marathas, 27 Allied Castes, 2 Brahmins, 6 Jains, 13 Muslims 39 Mahars, 16 Mangs, 15 Chambhars, 5 Ramoshis, 2 Dhors and 1 Nat. And not only did they all live together, but they cooked their food together and ate together. Shri Shankarrao Kharat who stayed in such a hostel and in later life became the Vice-Chancellor of the Marathwada University at Aurangabad has given a graphic and touching description of this atomosphere in his autobiography, 'Taral Antral' written in Marathi.

One can realise how big a step this was only if one remembers that even the strong-willed Chhatrapati Shahu Maharaj had to establish caste-wise and region-wise hostels in his own State though he very much desired that there should be common hostels for all. He had given an expression to his feelings of regret in this regard in a welcome speech delivered on the occasion of the visit of the then Governor of the Bombay Presidency to Kolhapur, in the year 1920.

This close living together and the approach of the Karmaveer's institutions made an impress on the young minds of the students. The present author can bear some testimony to this. About fifteen years back there were riots in Bombay among the Scheduled caste groups and the non-scheduled caste groups. The riots took place in the Worli area of Bombay and are generally known as the Worli riots. The present author worked as the chairman of a non-official Committee that had been appointed to investigate into the causes of this riot. The Committee then had responses from witnesses which indicated that people coming from Satara district had generally not taken part in these riots as they carried an impress of the Karmaveer's non-caste approach.

Mahatma Gandhi was impressed by this approach from the early days of the Rayat Shikshan Sanstha. He found time, therefore, to visit and bless the institution as early as in 1924. That Gandhiji continued to hold the Karmaveer in the same high regard is seen from a message that he sent to the Sanstha just three weeks before he was assassinated.

To this day the Rayat Shikshan Sanstha in its annual report publishes the religion-wise and caste-wise composition of its teaching and non-teaching staff. I do not know of any other educational institution which does thus. I also do not know of any other educational institution where this composition is nearer to the proportion of these groups in the general population.

Earn and Learn

The Karmaveer opened the gates of education to all castes. He also, on his side, opened it for all classes. But naturally the overwhelming majority of the students came from the lowest income groups. To students coming from these groups he assured that if they were prepared to take their education under conditions of physical hardship, and were prepared to put in manual labour he would see to it that they would get their upkeep and also get education. During his days there was no remission of fees on a general basis and the number of scholarships was also very limited. The Karmaveer's assurance, therefore, attracted many students, and he himself many a time spotted talented children from poor illiterate families and took them up for education. At least one of the four Vice-Chancellors referred to earlier had been so picked up in his early childhood.

Since India became independent conditions in relations to provision of freeships and scholarships have improved much. In the last days of his life the Karmaveer received the news that all fees had been abolished for the economically backward classes. His reaction was of mixed feelings. He also expressed this to the then Education Minister when the latter came to visit him in the hospital. The Karmaveer's fear was that this would keep the students away from hard work, which by itself is or should be part of good education. One can judge that Gandhiji would have heartily agreed. In free India even students from well-to-do classes should have been required to put in work and meet some of the expenses that the nation incurs on their education.

As we know we have chosen to do otherwise and the pioneering trail opened by the Karmaveer has been lost, perhaps for ever.

With Grants if Available Without Grants if Necessary

The present author, in his young days, had the good fortune to watch the Karmaveer in action while a new primary school was in the process of getting started. The Karmaveer had kindly taken him to the village where this discussion was to take place. This was in the pre-independence days and the present author still remembers the eager expressions on the faces of the villagers and how each small requirement was being considered and solutions devised. Not even once the question of any Government or any other type of grant was discussed. The Karmaveer's thrust was to carry on the work, grant or no grant.

This spirit of independence had to meet a critical and crucial test in 1948. After Gandhiji's assassination by a Brahmin there were large-scale anti-Brahmin riots in Maharashtra. The Karmaveer's institutions gave opportunities to Brahmins and many Brahmins were also among the members of the staff. If any reassurance is needed regarding the basic orientation of the Karmaveer and his institutions it is enough to mention that Professor D.R. Gadgil, the renowned economist, who later on also worked as the Deputy Chairman of the Planning Commission, was a close friend and an admirer of the Karmaveer and was associated with the Rayat Shikshan Sanstha as its Vice-President. In the hectic days of February, 1948, however, the Karmaveer came under a cloud of suspicion and the Government grants to his institutions were stopped by the Government. The Karmaveer, however, faced all this in his usual temperamental style : 'My head is bloodied but unbowed.' He decided to continue his work even without any grants, as he had done in most of the pre-independence years. The general public also rallied to his support and ultimately the Government had to restore the grants.

'Build the Bridges'

The Karmaveer's postures at first sight were militant but his approach was to build bridges between conflicting groups. This has come out very nicely in Shri Shankarrao Kharat's autobiography. The background is the Union hostal established in a makeshift shed near tne campus of the Fergusson College, Pune. It was also typical of the Karmaveer that the hostel was named 'Union' to commemorate the then recent Yerawada Pact between Gandhiji and Ambedkar. Shri Kharat narrates :

"Anna (the Karmaveer) was relaxing in an armchair outside rhe hostel. Our hostel was in a poor condition and in a poor area. A little beyond across the street glittering lights lit up the quarters of the rich and well-to-do people. We had all gathered around Anna."

Then Anna said, 'You have to build the bridges between these two extremes.'

Such was the man.

And such was his attitude.

A few weeks before his death the Poona University conferred on him the Degree of Doctor of Letters. As he could not go to the University Hall, the Vice-Chancellor, Dr. R.P. Paranjpye, went with some of the members of the Syndicate to his bed in the Hospital, and honoured him with the citation and ceremonial robes.

The University was really honouring itself.

The present author can vouchsafe for this feeling of the University of Poona. □

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Life, Work and Philosophy of Karmaveer Bhaurao Patil

A.B. Magdum

"Karmaveer Bhaurao Patil lived in the service of the motherland. Through his selfless work he ranks among the builders of modern Maharashtra and modern India" said Prime Minister Rajiv Gandhi, on the eve of the birth centenary of Karmaveer Bhaurao Patil.

'Karmaveer' literally means 'Hero in Action'. Bhaurao Patil was a hero in action. He was not a man of words. So we will have to trace his philosophy in his life and his work.

Karmaveer Bhaurao Patil was born on September 22, 1887. He got his primary education in the schools in those villages in which his father used to live as a humble government servant. Bhaurao was sent to Rajaram High School, Kolhapur, in 1902. In Kolhapur he lived in a Jain Hostel. Bhaurao did not do well in his studies, though with difficulty he went upto the pre-matriculation class. However Bhaurao had a good physique and was found of gymnastics.

In spite of his poor progress with books, many of his teachers liked him as he was ready to do hard physical labour, whenever occasion demanded it.

Bhaurao, as an educationist laid great stress on the dignity of labour. He expected his students to do hard manual work.

Bhaurao was expelled from the Jain Hostel because he attended the opening ceremony of a Hostel for the Depressed Class Boys—the Miss Clerke Hostel. Bhaurao was, then, taken by one of his classmates to the palace of His Highness Chhatrapati Shahu Maharaj of Kolhapur. Bhaurao's close acquaintance with His Highness widened his outlook and gave him a new philosophy of life.

Bhaurao was sent to Davar's College of Commerce, Bombay, by a philanthropist to learn book-keeping and type writing. But he did not show any progress there either.

After returning from Bombay, Bhaurao took to teaching. Unusual because he was never good at his studies. He gave private tuitions to individuals and later ran a small 'English Teaching Class'. His private tutorial work was a great success.

Out of his private tuition work, that he then did, rose the largest non-government network of primary, secondary and collegiate educational institutions ever seen in India.

Bhaurao earlier founded a study centre at Dudhgaon known as 'Dudhgaon Vidyarthi Ashram' with the cooperation of a number of local enthusiasts. Encouraged by the success of this experiment, Bhaurao founded his now famous educational society, the Rayat Shikshan Sanstha (Peasant's Education Society) in 1911, at Kale, which was shifted to Satara in 1924.

Prior to 1924, Bhaurao worked for some years as an insurance agent, as a recruiting agent and also as a sales representative of the 'Ogale Glass Works' and the 'Kirloskar Brothers'. He had founded the 'Cooper Engineering Works' in collaboration with Mr. Dhanjishah Cooper.

From 1924 to 1934, the Rayat Shikshan Sanstha functioned as a private institution of which Bhaurao Patil was the proprietor. He was, however, a strange proprietor who cared not for any profit for himself. On the other hand he spent his own money on this costly enterprise.

The first thing Bhaurao Patil did in Satara in the name of the Rayat Shikshan Sanstha was to found in 1924 a Boarding House for school-going children. The first inmate of this Boarding House was a Harijan boy. This Boarding House was named, as 'Chhatrapati Shahu Boarding House', at the auspicious hands of Mahatma Gandhi in 1927. There were 34 inmates in the Chhatrapati Shahu Boarding House, including 13 Harijan boys. The numbers grew from year to year.

A similar cosmopolitan Hostel—the Union Boarding House—was started in Pune in 1932, which enabled Bhaurao's boys to complete their collegiate education.

The two cosmopolitan hostels did pioneering work in the eradication of untouchability.

One of the distinguishing features of Bhaurao's educational institutions is that students are expected to do manual labour in order to get their education. In the case of his students, manual labour is an integral part of their education. Bhaurao advocated manual labour in schools and colleges so that no promising and deserving student should go without education on the ground of parents' poverty. It was the glory of Bhaurao and his students that they are not ashamed of the need to work. They believe in the dignity of labour.

The Rayat Shikshan Sanstha was registered in 1935, under the Societies Registration Act and later under the Public Trust Act. The first teaching institution founded by Bhaurao was an institution for the training of primary school teachers. But what gave him recognition as a great servant of the people was what followed, viz., the founding of a number of voluntary primary schools in the Satara District, more especially in the backward areas such as the mountainous areas in the west and the dry and arid areas in the east of the district.

Bhaurao's declared intention was to see that no village in the Satara District, however small, remained without a school and a trained school master. The number of Voluntary Primary Schools run by the Rayat Shikshan Sanstha began to increase from year to year. The peak year was 1947-48 with 578 such schools.

Bhaurao realised that the peasants of India should not be satisfied with the mere rudiments of learning provided in the primary schools, but should see that their boys and girls get atleast secondary education. So he devoted his energy to the spread of secondary education.

The first secondary school founded by Bhaurao was called the "Maharaja Sayajirao Free and Residential High School'. No fees were charged. The pupils were enabled to earn for their education through such kind of manual labour as breaking stones, levelling grounds, bricklaying and agricultural work.

Karmaveer Bhaurao Patil was keen that no one should expect to get education or living expenses free. That produces sycophants and social parasites. Students should be ready to help themselves by the sweat of their brow. "Education through self reliant and self respecting effort" was the slogan. Subsequently Bhaurao Patil opened a number of secondary schools in the rural areas of Maharashtra.

The first college of the Rayat Shikshan Sanstha was opened at Satara, by Bhaurao Patil in 1947. This was the 'Chhatrapati Shivaji College'. This too was Free and Residential. No fees were charged and admission was restricted to students who agreed to live in the College Residency, and to submit themselves to the discipline of austere simplicity in living and the obligation to do manual labour.

A Bombay educationist, who was engaged in a study of educational experiments in India and collected information regarding the 'manual labour scheme' of the Chhatrapati Shivaji College wondered why the scheme should not be introduced in other colleges in India.

Bhaurao Patil opened the Sadguru Gadage Maharaj College, in 1954, at Saidapur, a small village near Karad. In 1955, he opened, at Satara, a College of Education for the training of graduate teachers, which was, later named as the 'Azad College of Education' in memory of late Abul Kalam Azad. Bhaurao believed in the preparation of teachers and social workers he needed for the work he had undertaken.

Bhaurao was not keeping good health in later years and passed away on May 9, 1959.

The Rayat Shikshan Sanstha, founded by Bhaurao conducts, in 1988, more than five hundred institutions including 326 secondary schools, 29 colleges affiliated to 3 Universities and nearly one hundred cosmopolitan hostels.

Karmaveer Bhaurao Patil lived a simple and austere life. He ate the same kind of food as the ryot ate. His dress was extremely simple. When he first saw Mahatma Gandhi, in Bombay, in 1921, calling on people to make a bonfire of their foreign clothes, Bhaurao threw his foreign clothes into the fire. From that time, he went about everywhere clad in rough Khadi clothes. He, never put any headdress or footwear. The 'ghongadi' he wore on his shoulders was his raincoat in the monsoons, often his rug at night, and sometimes his mattress as well. It was in this simple dress that Bhaurao attended a Durbar in His Highness Sayajirao Gaikwad's Court at Baroda and attended a reception given to the Russian Prime Minister in Pune in 1956.

When Bhaurao travelled to collect donations for his institutions, there were occasions when he slept in the open on the bank of a river and on the footpaths in the Bombay city. When hospitality was available he preferred to stay with working class people.

In the later years of his life money flowed into his hands, not only in thousands, but in tens of thousands. With all that, however, he continued to live the life of an ordinary ryot, with this difference that while a ryot had some land and a living house of his own, Bhaurao had no property which he could call his own.

The distinction of the Karmaveer was that for the major portion of his working life, he refused to accept any honorarium for his own service. In this respect Bhaurao was a true follower of Mahatma Jyotirao Phule and Mahatma Gandhi. The Karmaveer kept his simplicity of life and unselfishness right to the end.

Bhaurao was a poor man because he chose to be poor. He had shown in his younger years that he could make money for himself if he chose to. But after some time, he gave up all effort to acquire money. On the other hand, whatever little saving he had or whatever amount he could get, he spent on the education and upbringing of lads from the countryside whom he had collected for the purpose of education.

Bhaurao was not rich in money, but he was rich in faith. He had faith in the worthwhileness of his cause. He also had the faith that if the cause was good and if he worked for it whole-heartedly and without selfish motives, support was sure to follow. He had great faith in the willingness of other people, especially of the poor and ordinary folk, to come to his support whenever he needed support.

Karmaveer's greatness is seen not only in his conviction that all worthwhile cause will be supported; it is also seen in his readiness to say 'no' to any offer, with unjust conditions attached to it.

The stream of popular support to Karmaveer Bhaurao Patil's work was growing in volume rapidly and steadily. Princes, Rajas, Maharajas, businssmen and landlords had joined hands with hundreds and thousands of poor peasants and farmers in an effort to make the Rayat Shikshan Sanstha's work an effective expression of the will of the common people to rouse themselves from their time-old apathy and indifference in regard to education.

Different people have called Bhaurao by different names. His students and friends called him 'Anna' or elder brother. The people called him Karmaveer. The President of India awarded him a Padma Bhushan. The Poona University conferred on him the honorary degree of Doctor of Letters.

Karmaveer Bhaurao Patil had certain ideas of education which had not entered the minds of the leaders of education of India.

Bhaurao had suggested to the industries—the Kirloskar Brothers and Cooper Engineering Works—that provision should be made for young workers to learn school subjects during working hours. Such views are more prevelant today, when industries are regarded, not primarily as means of producing wealth for a few, but as a means of serving the interests of the working people no less than those of the employers. How far ahead Bhaurao was of others in this matter is seen from the fact that today also no demand is made by educationists in general that education of the employees is an integral part of education obligation of the industry.

Failing to make his industrialist friends serve the common man in the matter of education, Bhaurao thought he would himself make it possible for young people to engage themselves in remunerative work and at the same time prosecute their studies. This idea he put in the form of a slogan, "Earn and Learn". He put this idea into practice in his institutions. Bhaurao firmly believed that school and college education should be made available to young people who are willing to work.

He realised quite early that remunerative work and education should not be kept away from each other in watertight compartments. Even today most universities in India seem to work on the assumption that university education is for the well-to-do and for those who are enabled by scholarships to live like the well-to-do, and that they have no responsibility for those young men who, though they are compelled to seek employment for economic reasons, want to continue their studies. It is only recently that some provisions are being made for continuing education.

Bhaurao did not want to encourage sycophancy in education and therefore disapproved of students begging for their tuition fees or maintenance. For the same reason he discouraged young people depending on their parents for their education. At the same time Bhaurao was keen that no one, who was willing to work and who was intelligent to profit by studies, should go without education suitable to his talents. He strongly pleaded for equality of educational opportunity.

Karmaveer Bhaurao Patil visualised the creation of a casteless society and he held that life in cosmopolitan hostels was more conducive to this end, than separate hostels for different castes. Through such separate hostels, the idea of segregation is strengthened, he held, instead of being broken down, whereas in cosmopolitan hostels a sense of oneness prevails.

Referring to this cosmopolitan character of Bhaurao's hostel, Maharaja Sayajirao Gaikwad of Baroda said in 1933, "An institution like this which is so free of distinction of caste or creed may not be found elsewhere in India." About twenty years later the Sarvodaya leader Jayaprakash Narayan said that a visit to Bhaurao's hostel was something that gave him inspiration and guidance. Similar eulogies have been recorded by Shri Vallabhbhai Patel, Dr. Karve, Dr. Ambedkar, Shri Thakkarbappa, Madanmohan Malviya and a host of other eminent notional leaders, who visited Bhaurao's cosmopolitan hostel. They described it as the unique institution, as there was no parallel to it anywhere else in India. In Bhaurao's educational work, no distinction was ever made in regard to religion, caste or creed.

Bhaurao saw creative possibilities in persons and also in unused lands. "Give me wastelands, and I will turn them into best lands", he often said.

'Shramdan' is a popular word now-a-days. It was to the credit of Bhaurao Patil that, quite early, he envisaged the importance of his students working with their hands not only on certain occasions, but as an essential factor in education throughout the educational period. But the education he had in mind was not something purely academic. It was education for life, that he wanted. Moreover the life he was concerned with, was not so much the life of the leisured classes, as that of the toiling population. He believed in democracy and regarded education as a means to give the ryots and other working people a higher standard of life—to enable them to lead a full life.

Besides education, Bhaurao used other means to serve the people. Education and rural uplift went together in Bhaurao's thoughts.

The educational philosophy of Karmaveer Bhaurao Patil was not of an academic type. It had direct bearing upon practical life. His philosophy grew out of his work, out of difficulties confronted, out of challenging situations. His philosophy may be classified as pragmatic.

Bhaurao used to say, "I had no fixed plan for the work undertaken by me. Like a man walking in darkness, with a torch in his hand, I walked and covered that much distance which was illuminated by the flash of the torch. Then a second flash illuminated further ground to be covered."

For Bhaurao the philosophy evolved out of his experiments that had instrumental value for attaining the goal of mass education, and the liberation of the downtrodden sections of the society. □

Arts, Science & Commerce College,
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Est. 1968

No. of Students : 1173

Shri B.A. Chopade
PRINCIPAL

The Influence of the Works and Thoughts of Karmaveer Bhaurao Patil on Maharashtra

S. R. Suryavanshi

About three decades have gone by since the sad demise of Karmaveer Bhaurao Patil. Many attempts have been already made in recording his life, works and educational philosophy in the form of books, articles, Ph.D. theses and special issues of periodicals. Time was, when he was alive, when his activities and imperishable words were reverberated all over Maharashtra. It is time now when a serious study of his contribution of permanent importance to the cause of education and society at large should be carried. Atleast, it is of paramount significance to know the legacy of the great educationist and social reformer in the present situation. In the following passages an attempt is made to show broadly how his revolutionary ideas and activities have gone in shaping the educational, social and political ideas current in Modern Maharashtra.

Karmaveer Bhaurao Patil may be counted among those who have done concrete work for the all-sided development of Maharashtra. Having been personally influenced by the great leaders and social workers, he had the unparalleled magnanimity of soul which aspired for the uplift of the educationally and socially backward and economically handicapped sections of society. A dreamer and at the same time an activist, Bhaurao Patil always thought of speedy progress of the state as a whole, but, he had a firm conviction that it is through education alone that the masses can, not only realise the causes of their plight and backwardness but also struggle for attaining social and economic stability. Throughout his life he strove for educating the masses by opening primary and secondary schools and colleges imparting instructions in various faculties. The educational institution named Rayat Shikshan Sanstha connoting mainly the masses—was founded by him in 1919. This institution, a type by itself, is conducting 326 Highschools, 29 Colleges, 22 Primary Schools, 81 hostels, 8 Training Colleges for Teachers and numerous ancillary branches. One can rarely find an educational institution doing the work in about 16 districts of Maharashtra and running about five hundred branches. During the last 70 years, it has been imparting education to those who might otherwise have been deprived of their right to education. The Government and the people of Maharashtra have long before recognised the exemplary services rendered by this institution. It has become a model for a large number of other educational institutions, especially in respect of its administrative pattern, and its aims, objectives and functioning. The successful functioning of this institution might not have been possible without the presiding spirit and towering personality of its founder.

Having robust health and robust mind, Bhaurao Patil looked like a great saint and visionary. A man of action and of firm convictions, he had captivating oratory. His words were grounded in experience and knowledge, reality and prophecy. Clad in Khadi dhoti and shirt this barefooted and bareheaded Karmaveer moved from village to village and from district to district, giving his message of the need of education, of education through self help, of eradication of caste system, of improvement of the lot of the downtrodden. The work he had undertaken was so significant, his devotion and his urge so strong and his approaches so captivating that many persons from all sections of society were grealty influenced by his educational mission. The commoners as well as landlords expressed their desire to contribute their mite for the progress of the educational work. As a result, he could open hundreds of primary schools, high schools, training colleges and a few affiliated colleges in his life time. The institution has grown from strength to strength and since the network of its branches has spread like the branches of the banyan tree (which is the symbol of the institution), in 16 districts of the State of Maharashtra, it has become the biggest and most influential educational institution. Founded and blessed as it is, by Karmaveer Bhaurao Patil, the institution has left an indelible mark on the general set-up of education in Maharashtra. It will not be an exaggeration to state that the history of the last sixty years of the development of education in Maharashtra has much to do with the history of the Rayat Shikshan Sanstha. Having been inspired by the pioneering work of Karmaveer Anna, many educationists in Maharashtra were moved to establish their own educational institutions, although they had different motives and ideals before them. As a result, one notices dozens of educational institutions on the map of Maharashtra, thus making it one of the educationally advanced states of India.

Tutored as he himself was in the thoughts of removal of illiteracy and untouchability, the first work which Karmaveer took in his hand was that of opening primary schools in the inaccessible, remote hamlets of western Maharashtra and thus he launched his bold and revolutionary programme of eradication of illiteracy. The then Government was greatly impressed by this extraordinary feat and was not only moved to take over all those voluntary schools in order to make them aided schools but also to change the very educational policy for the better. The Government was convinced of the need of the spread of primary education so much so that it started opening hundreds of primary schools in the remote regions of Maharashtra.

Long before our Independence, Karmaveer Bhaurao Patil, a dreamer and a visionary of visions, had envisioned the casteless and classless society of India. In order to realise his long cherished dreams, he established such boarding houses wherein could reside the inmates drawn from all communities, castes, creeds and religions. The first boarding house established in 1919 at Kale, a village in Satara District. Soon came a number of boarding houses among which Chhatrapati Shahu Boarding House Satara is the one which was christened at the auspicious hands of Mahatma Gandhi, and which trails a long and glorious history of the brightest and most devoted team of life members of the institution. The inmates of such cosmopolitan hostels lived, dined and studied together. Here indeed was the first-ever bold and conscious experiment in national integration. Hundreds and thousands of inmates of these hostels removed for themselves the curse of untouchability and social disintegration. They became responsible citizens of the state who later carried on the message of the Karmaveer. Similarly many other educational institutions were convinced of the ideals for which the Karmaveer stood and they opened numerous hostels on the same pattern. It is with the efforts of these institutions and those of the Government that the scar of untouchability is removed from the state. The Rayat Shikshan Sanstha gives more importance to hostels since they not only provide the boarding and educational facilities but also promote social harmony.

The educational principle of the greatest significance which the Karmaveer propounded was the principle of 'Education through self help'. It is perhaps the first educational experiment ever practised in the whole of India. With this principle, the Karmaveer has shown to all the students coming from the economically handicapped sections of society that one can win education by one's own sweat of brow and that poverty or financial straits cannot come in the way of their education. This principle is embedded in a sound philosophy of life. It has been for years the practice of the educated ones to shun all physical labour and to despise those that do the hard work. The recent generations of educated persons have all shown indifference to the principle of dignity of labour. The Karmaveer right from the inception of the Rayat Shikshan Sanstha, bore to his bosom the idea that the persons educated in his institution should be self reliant, and sympathetic to the common masses that form the bulk of Indian population. With this view in mind, the Karmaveer, this apostle of an absolutely original principle of education, appealed to the masses, "Give us waste land, we will turn it into the best land". At present, many branches of the Rayat Shikshan Sanstha possess cultivable lands which have become the places upon which the experiments of "Earn while you learn" are being made. So far, thousands of students from various schools and colleges have been benefited by the 'manual labour scheme'. The very motto of the sanstha is "Education through self-help". Needless to say, that in full recognition of the significance of the principle, the Shivaji University, Kolhapur has been implementing the manual labour scheme since 1969. One however, is surprised to know that although much expenditure is normally incurred on education and though thousands of parents find it very difficult to provide higher education to their wards, neither the Government nor the educational institutions are directing their policies for the implementation of such a beneficial scheme.

The Karmaveer also propounded the idea that all the students should have the technical know how of minor articles, of things they handle in their day to day life, so that they could use their hands and heads for the betterment of their lives. The practice of it would, he believed, train them in coordinating learning with life. Perhapse it is this notion of work experience which seems to have been introduced in the school curricula by the Government of Maharashtra.

Karmaveer Bhaurao Patil was practical idealist. He thought that the educational institutions or their branches should be financially self-supporting. They need not always depend upon the external aids for their development. With this view in mind, he established a bank and a co-operative store to make a beginning. The institution also owns many acres of cultivable land in many districts. Although, they are not and will not be sufficient for meeting the expenses of the branches, they stand as an insignia of remarkable feature which many institutions, small or big, should strive to emulate. It is no wonder that many educational institutions have of late created their financial resources.

Another remarkable feature of this outstanding institution is its democratic administrative set up. For purposes of smoth administration, the institution has established four regional offices at Satara, Sangli, Ahmednagar and Pune and the central office at Satara. The General Body, the Managing Council, the Board of Life-Members, Higher Education Committee (meant for Colleges) and the Coordination Committee (meant for high-schools, primary schools, etc.) are some of the bodies which periodically and democratically settle all issues and fix policies for smooth day-to-day functioning of 500 branches. For purposes of execution the sanstha has instituted the posts of the Organiser, the Secretary, the Joint Secretary, the Auditor and the four regional Inspectors. The working of the institution has been guided and patronised by eminent dignitaries of national and state level in their capacities as the President and the Chairman. One will be surprised to know that the Karmaveer who had framed this administrative structure had never been a member of any administrative body. This should go as an object lesson for the followers of Karmaveer's principles.

Another worth-noting principle enunciated by Karmaveer Bhaurao Patil was that every educational institution should be managed by its own teachers. With this view in mind, he had trained and moulded the teachers of the Sanstha. During his life time, he had formulated the cadres of selfless and dedicated workers of sacrificing nature who would be capable of shouldering the educational responsibilities. It is worthwhile to note here that both the Government and the public have, from time to time, applauded the administrative set-up and the devoted teachers of this institution. The modes of proper functioning of this institution have been adopted atleast partially by other educational institutions. The Sanstha has also provided teachers of outstanding merit to various institutions and Government concerns.

As he was influenced by Mahatma Phule and Mahatma Gandhi, Karmaveer Bhaurao Patil had thought of the necessity of providing education to women. The schools which are located in the rural areas are attended by thousands of girl students. Long before independence, he had established a cosmopolitan hostel for girls and Jijamata Training College for training the primary school lady teachers. The Karmaveer used to stress the need of women's education in all his speeches delivered in different districts on different occasions. It was he who created an awareness of female education among the rural public.

The Karmaveer often pronounced his innermost desire of establishing a sort of Rural University which could impart such education that would be useful and accessible to the people from the rural areas and which could brighten their lots. Such a university, he felt, would implement his principles such as earn while you learn, dignity of labour, mass education, uplift and enlightenment of the masses, etc. Although this dream was not realised during his life time, there is every reason to believe that in the light of changing horizons and new dimensions of the educational policies of the Central Government, it would not remain a dream.

The personality of Karmaveer Bhaurao Patil was a rare blend of educationist and social reformer. Basically, he being a social reformer he wanted to have social amelioration through proper education, which according to him, was the most effective means of all social changes. In fact, there was no aspect of social life which was left uncontemplated by him. With the beginning of this century, there had been a number of social movements working for the banishment of the social ills. These and the thoughts of Mahatma Phule and Mahatma Gandhi had made an impact upon Karmaveer as a social reformer. Having been inspired to do something for the sake of society at large, he first became a member of the Satyashodhak Movement which had been started by Mahatma Phule in 1870 and which had all along been striving with constructive means to free the society from the social ills like, illiteracy, inequality, casteism, untouchability, dowry system, and traditional superstitious practices. Besides being mainly engaged in educational work, he often participated in the activities of various social organisations and movements. He played a vital role in the eradication of untouchability, participated and worked effectively in the Harijan Seva Sangh established by the Father of the National, worked as a member of the Mission established by Sant Gadge Maharaj who endeavoured to bring about social unity, brotherhood and the uplift of the Harijans. He worked as a Trustee of the Depressed Class Mission founded by Vitthal Ramji Shinde. worked as a member of the Backward Class Welfare Board of the then Bombay Presidency. He was a member of the Satara District Board established for the welfare of Harijans, and was for many years, a member of the Satara District Development and the Rural Development Board. He was also a member of the Maharashtra Social Conference which had before it the goals of social equality, eradication of untouchability and the economic development of the masses.

Wherever Karmaveer Bhaurao Patil went, he propagated the need of inter-caste marriages which, he thought, would bring about speedy social harmony. He not only settled such marriages but also attended many which he had not settled. He had the intention of emancipating the masses from the orthodox traditions and superstitions. When the Kirloskar plough came into the market the peasants were unwilling to use it as it was made of iron. But Karmaveer convinced them all of its effectiveness and wiped out their superstitious notions. Whenever occasion demanded the Karmaveer spoke harshly against the exploitation of the paupers and peasants by the moneylenders and the landlords. He was against all types of religious rites especialiy those performed by the village priests. He had opened 'Samskar Kendras' at many places where persons from all castes and religions would gather together and learn about the needs of cleanliness, social unity, equality and literacy. This is how the reformer in him was constantly absorbed and engaged in removing the malpractices and ignorance of people. All his attempts have gone a long way in moulding the minds of generations of Maharashtrians. His works and speeches have awakened masses from lethargy, ignorance and stupor.

Although not an active politician, Karmaveer Bhaurao Patil was indirectly involved in the political activities before and after independence. But his political thoughts had a bearing on the liberation and welfare of mankind. He did not propagate any ism though he had inclination towards the isms which struggled for the all sided progress and equality of society. Before independence, the teachers and students in his schools had created an urge for freedom in the minds of the villagers. In his life time and after, the leaders of various political parties in Maharashtra used to take keen interest in the progress of his institution. The Karmaveer had maintained warm relations with the workers and leaders of all political parties. He had remained throughout a staunch nationalist.

As a pragmatist to the core, Bhaurao Patil had a practical view of all things. He used to study the problems from the economic point of view while developing various branches of his institution. Similarly, he had given a serious thought to the economic conditions of the farmers. He wanted that agriculture in the nation should be modernised by the use of modern techniques and implements. He used to lay emphasis on the cooperative movement to usher in general economic progress of the farmers. He started in 1911, and effectively implemented the Co-operative Farming Scheme at Koregaon (Satara). He also executed a scheme of all sided development of nine villages around Devapur in Satara District. The Scheme was started by Sir Dorabji Tata Trust Rural Development Board. He also started a Cooperative Bank and a Consumers' Cooperative Store for the sake of the staff of the Rayat Shikshan Sanstha. These and such other activities indicate that he believed in and cared for the concept of socialism through cooperation.

The State of Maharashtra has been the cradle of great saints, national leaders, educationists, thinkers and social reformers. Karmaveer Bhaurao Patil is one of the few architects of Modern Maharashtra. All his works and words have, as has been adumbrated above, phenomenally rendered concrete services to the State of Maharshtra in its stages of multi-faceted development. The legacy of his works and words will not only be enshrined and treasured up in the bosoms of generations to come but also will inspire educationists, social reformers economists and even politicians, in their respective undertakings. □

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

Rayat Shikshan Sanstha, Satara

Subhashchandra Bhosale

The Rayat Shikshan Sanstha owes its inception to the Great Social Reformer and the Renowned Educationist, Karmaveer Bhaurao Patil, who founded it on October 4, 1919 at one small village Kale (District Satara). His firm conviction that the genesis of the most of the social evils such as inequality—both social and economic—caste-based distinctions between man and man, undesirable traditions and superstitions, lay in the ignorance of the masses; and that the eradication of the ignorance is of paramount importance, led him to the mission of educating the masses. He believed, as is commonly believed, that the education is the powerful means of social transformation.

Karmaveer Bhaurao Patil had a fathomless faith in the work of such towering leaders, as Mahatma Jotirao Phule, Mahatma Gandhi, Chh. Shahu Maharaj and creative connections with and stimulating support from the great contemporary servants of society like Sant Gadage Maharaj, Vitthal Ramji Shinde and Dr. Babasaheb Ambedkar. This not only resulted in strengthening his convictions, but inspired him to work ceaselessly with untiring zeal and drive for the mission of the cause of education to the common man. Bhaurao did this through his Rayat Shikshan Sanstha. The Sanstha thus, has a commitment to the cause of upliftment of the down-trodden through education right from its foundation.

Although established in 1919 at village Kale, the Head Quarter of the Sanstha was soon shifted to the District place Satara in the year 1924.

The primary form of the Sanstha was that of running the hostels for the boys coming for education to cities. The first of such Hostels was opened at Satara in 1924 with just 4 inmates. Although in terms of strength, the Hostel was very small, in terms of its social significance, its work was great and unique, as the 4 inmates residing in the Hostel belonged to different castes—two of them being Marathas, one Jain and one Mahar by caste. Later in the year 1927, the Hostel was named as "Shri Chh. Shahu Boarding". The inmates in this Boarding were made to live common family life forgetting thereby traditional caste distinctions. They were further made to do the manual labour for such as cleaning the rooms and yards, preparation of food, helping the building constructions, farming, etc. with a view to promoting the dignity of labour and arresting the development of white-collar leanings.

Until 1935, the Sanstha was being run as the private society without the recognition of the Government. In 1935, however, it was registered under Society's Registration Act, 1860.

This experiment of Karmaveer was not only unique but was revolutionary as well, as it was an open challenge to the traditionalism and casteism that had intoxicated the Indian Society almost to the state of madness. The Sanstha later on went on opening additional hostels on toe lines of Chh. Shahu Boarding. Today, there are as many as 83 such hostels with inmates' strength of 3,931.

Besides the hostels described above, the Sanstha has been running for the last 46 years hostels for Court-committed boys with a strength of over 4,500 and of late a Hostel for 50 destitute children.

Upto 1935 the Sanstha had only the limited sphere and also the restricted nature of work, that of running Hostels for students and of inculcating in them the values involving humanity, fraternity, equality and dignity of labour. In 1936 the Sanstha, as a next step in its mission, took up the programme of running primary schools in villages. For this the Founder did extensive bare.footed travelling treading the remote planes, valleys and hills. Starting with first primary school at Satara (presently known as Rao Bahadur Practising School), the Founder opened as many as 578 primary schools in different villages. After Independence, however, they were transferred to Government. Presently, Sanstha runs 4 Primary Schools.

But before venturing on this vast programme, the Sanstha was quite conscious of the dearth of the adequately trained teachers who could go into the villages and teach there. It was, therefore, necessary to prepare trained teachers to meet the need. The Sanstha, therefore, opened, in the year 1935 the first Primary School Teachers' Training College at Satara, present known as Mahatma Phule Training College. Later, the Sanstha opened additional training colleges Presently, it runs 8 such Training Colleges in different Districts of Maharashtra.

In the year 1940, the Sanstha stepped into the field of Secondary Education by starting a Secondary School at Satara after the name of Maharaja Sayajirao Gaikwad of Baroda. The most significant feature of this School was that it was run initially as the "Free and Residential School"—a unique experiment

RAYAT SHIKSHAN SANSTHA

At a Glance—1987-88

Types of Inatitutions

		No.
Senior Colleges		29
Secondary Schools		326
Girls' Schools	12	
Higher Secondary Schools	100	
Commerce Schools	7	
Agriculture Schools	11	
Technical Schools	18	
Junior Colleges of Education		8
Tailoring Institutions		2
Primary & Pre-primary Schools		22
Cosmopolitan Hostels		81
Ancillary Branches		41
	Total	509

Students

Colleges	23,283
Junior Colleges	15,329
Secondary Schools	2,42,217
Junior Colleges of Education	695
Tailoring Institutions	35
Primary & Pre-primary Schools	3,915
Total	2,85,474

Employees

Administrative Office	147
Colleges	1,764
Junior Colleges	444
Secondary Schools	10,274
Junior Colleges of Education	109
Primary & Pre-primary Schools	115
Hostels	66
Ancillary Branches	34
Total	12,953

indeed. This first step in the field of secondary education was actually the beginning of a long, unending march, as the Sanstha went on adding more and more schools every year covering more and more villages in different parts of Maharashtra creating thereby the opportunities of secondary education to such students as would normally never reach there. In fact, Karmaveer Bhaurao Patil himself, while paying homage to Mahatma Gandhi after his sad assassination, had vowed to open 101 schools in the name of the Father of the Nation. Today the Sanstha runs as many as 321 secondary schools which include 99 higher secondary schools and 36 technical schools in 13 Districts of Maharashtra and Belgaum District of Karnataka.

The year 1947 was the year when Sanstha's progress graph rose into the-top stage of education, as in this year the Sanstha entered into the field of higher education by starting a college at Satara in the name of the great King of Maharashtra, Chh. Shivaji Maharaj, whom the people of Maharashtra deify. Here again the Founder made the bold declaration—"This College will be runs as Free and Residential". Free because he thought the poor wouldn't afford to pay fees and residential because he wanted to work on them and give something more than what the university curricula give—the human values and the social consciousness. The students of this College were made to meet the cost of their education—at least partly—through their own earnings. For this the Sanstha started the scheme "Earn while you Learn". The Sanstha's march in this field also is continuous and unending as will be evident from the present number of the 29 Colleges imparting instructions in the usual faculties of Arts, Science and Commerce and also professional faculties of Education, Law and Engineering.

Besides these educational institutions the Sanstha runs some additional ancilliary branches and schemes such as :

(i) Rayat Sevak Co-operative Bank
(ii) Rayat Co-operative Stores
(iii) Laxmibai Bhaurao Patil Shikshanottejak Patpedhi
(iv) Panchayat Raj Training Centre
(v) Rayat Printing Press
(vi) Rayat Sevak Welfare Fund
(vii) Rayat Sevak Niyatakalik
(viii) Rayat Shikshan Patrika
(ix) Karmaveer Vidya Prabodhini.
(x) Rayat Sevak Kutumb Kalyan Yojana.

Well, The Rayat Shikshan Sanstha has been doing this work for the last 6-7 decades in Maharashtra. It has grown from its miniature form in 1919 to the present magnificent form. Its tremendous success and its stupendous work hardly has any parallel elsewhere, and we feel the secret of this success lies in the cause. The cause of the emancipation of the masses through education. ☐

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SENIOR COLLEGES CONDUCTED BY

THE RAYAT SHIKSHAN SANSTHA *(Contd.)*

Founder : Padma-Bhushan Dr. Karmaveer Bhaurao Patil

Sadguru Gadge Maharaj College, Karad, Dist. Satara

(Arts, Science & Commerce)

Est. 1954

No. of Students : 3286

Shri D.K. Khot

PRINCIPAL

Chhatrapati Shivaji College, Satara

(Arts)

Est. 1947

No. of Students : 1962

Dr. S.R. Suryavanshi

PRINCIPAL

Dada Patil College, Karjat, Dist. Ahmednagar
(Arts, Science & Commerce)

Est. 1946

No. of Students : 1209

Shri R.S. Shetye
PRINCIPAL

Chandrarup Dakle Jain College of Commerce,
Shrirampur, Dist. Ahmednagar

Est. 1962

No. of Students : 1546

Shri S.D. Bhor
PRINCIPAL

Karmaveer Bhaurao Patil

Glimpses of a Great Life

Educational Work

1. Participated actively since 1909 in the work of 'Shikshan Prasarak Mandal', Dudhgaon.
2. Established in 1919 the Rayat Shikshan Sanstha at Kale, Tal. Karad, Dist. Satara for imparting education to the children of the villagers.
3. Opened in 1921 a hostel at Nerle, Tal. Walwa.
4. Established in 1924 the first Students' Hostel at Satara which was meant for the students coming from all communities, castes and creeds. He named it, after the name of the great Social Reformer viz., Rajarshi Chhatrapti Shahu Maharaj, at the auspicious hands of Mahatma Gandhi in 1927. Since then, Mahatma Gandhi used to give annual donation of Rs. 500/- from the Harijan Sevak Fund which was founded by him.
5. Established in 1932 a cosmopolitan 'Union Boarding House' which was a hostel meant for students coming from rural areas for taking higher education in Poona.
6. In 1935, he got the Rayat Shikshan Sanstha registered under the Societies' Registration Act. In the same year he established a Training College for training Primary teachers.
7. In 1936, he established the first primary school at Satara and named it after the social worker from Satara viz., Rao Bahadur R. R. Kale.
8. Established in 1938, the first—Voluntary Primary School of the Rayat Shikshan Sanstha at Yewateshwar, a village which is situated on a hill. In the succeeding years he started as many as 578 similar voluntary primary schools in the hilly, mountainous and famine-stricken areas.
9. In 1940, he established a free and residential secondary school at Satara and named it after Maharaja Sayajirao Gaikwad. The School was meant for students coming from all classes and communities. Afterwards he founded 101 secondary schools during his life-time.
10. In 1942, he started a cosmopolitan hostel for girls and established Jijamata Training College meant for training the Primary school lady-teachers.
11. In 1947, he established at Satara the first College on behalf of Rayat Shikshan Sanstha imparting higher education to students in the rural areas of the then Bombay State and named it after the National Hero viz., Chhatrapati Shivaji Maharaj. For some early years it was conducted as a free and residential college.
12. The second College for imparting University Education was started at a Taluka Place, Karad (Dist. Satara) in 1954. It was named after the great saint of Maharashtra viz., Sant Gadage Maharaj.
13. In 1955, he established a B.Ed. College at Satara which was meant for training the secondary school teachers and he named it after the great National Leader, Maulana Abul Kalam Azad.

Allied Educational Work

1. Participated actively in solving the problems and difficulties regarding services of the primary teachers and guided their State Level Organisation.
2. Worked as a Member nominated by the Chancellor on the Court of the Poona University.
3. Worked as a Member of the Advisory Body of the Mahatma Gandhi Vidyamandir, Malegaon, Dist. Nasik.
4. Worked as a Member of the Latthe Education Society at Sangli.
5. Worked as a Member of the Provincial Board for Education of the Bombay State.

6. Set an ideal example before the whole nation through Rayat Shikshan Sanstha by various innovative educational experiments in 'Education through Self-help', 'Dignity of labour', 'Earn and Learn' and chatusutri—i.e. 'Swavalamban— Swabhiman—Swadhyay—Samata'.

Social Work

1. Worked as frontline worker in the Satyashodhak Movement started by Mahatma Phule.
2. Played a leading role in the Movement for Eradication of Untouchability.
3. Participated and worked actively in the Harijan Sevak Sangh established by the Father of the Nation, Mahatma Gandhi.
4. Worked as a Member of the Mission established by one of the great saints of Maharashtra, viz., Sant Gadage Maharaj for purposes of social unity, justice, brotherhood and uplift of the Harijans.
5. Worked as a Trustee of the Depressed Class Mission which was founded by a great Social Reformer, viz., the late Vitthal Ramji Shinde.
6. Worked for many years as a Member of the Backward Class Welfare Board of the then Bombay Presidency.
7. Executed effectively a Scheme of all sided development of the nine villages started by the Sir Dorabji Tata Trust Rural Development Board at Devapur, Dist. Satara in famine stricken area.
8. Worked as a Trustee of the Sant Chokha Mela Dharmashala which was founded for the welfare of the Harijans.
9. Worked as a Trustee of the Shashikala Sanitorium (T.B. Hospital) at Jaisingpur, Dist. Kolhapur.
10. Actively participated in the Social Conference held in Pune for Social Unity and Social Justice.
11. Worked for many years as a member of the Satara District Development Board.
12. Worked for many years as a Member of the Rural Development Board, Satara and of the Provincial Board, Bombay.
13. Worked as a Member of the Satara District Board which was established for the welfare of the Harijans.
14. Made untiring efforts to safeguard the interests of the workers from different industries by forming their organisations and looking after the education of their wards.

Work in Cooperation Movement

1. Started in 1911 and effectively implemented the Cooperative Farming Scheme at Koregaon, Satara District. The Scheme was meant for the welfare of the peasants.
2. Established in 1940 a Cooperative Society for the sake of workers in the Rayat Shikshan Sanstha. The Society was later converted into a Cooperative Bank.
3. Established in 1942 a Cooperative Store for the sake of the workers in the Rayat Shikshan Sanstha.
4. Established "Sou Laxmibai Patil Fund" for giving financial assistance or interest free loan to the poor and deserving students. (It was later converted into *Patpedhi*)
5. Helped to raise the standard of life of the peasants having small holdings by developing their farms through the establishment of many cooperative societies at and around Devapur in Satara District.

KARMAVEER BHAURAO PATIL

A CHRONOLOGY

1887 : **September, 22 :**
Born at Kumbhoj, Tal. Hatkanangale, District Kolhapur.

1902 : Joined 'Rajaram High-School' and 'Jain Boarding' Kolhapur.

1909 : Active Participation in the work of 'Shikshan Prasarak-Mandal', Dudhgaon.

1912 : Married to 'Adakka' (Laxmibai), the daughter of Shri Anna Patil, Kumbjoj.

1914 : King Edward's Statue—
'Tar Episode' (Kolhapur).
Sales Representative—Ogale Glass Works, Ogalewadi.

1916 : Sales Representative—Kirloskar Brothers Limited, Kirloskarwadi.

1919 : **October, 4 :**
Established the Rayat Shikshan Sanstha and opening a hostel at Kale, Tal. Karad, District Satara.

1920 : Pledges to wear Khaddar for life time.

1921 : Resigns services of Kirloskar Brothers Ltd., Kirloskarwadi.
Opens a hostel at Nerle, Tal. Walwa.

1924 : Shifts the headquarters of the Rayat Shikshan Sanstha from Kale to Satara and opens a cosmopolitan hostel.

1927 : **February, 25 :**
Naming ceremony of the hostel at Satara as 'Chhatrapati Shahu Boarding House' at the auspicious hands of Mahatma Gandhi, the Father of the Nation.

1932 : Opens a cosmopolitan hostel : 'Union Boarding House' in Poona, for college students.

1935 : Registration of the Rayat Shikshan Sanstha.
Opens a Training College for Primary teachers.

1936 : Opens 'Rao Bahadur Kale Practising School', Satara.

1938 : Forms 'Primary Education Committee' and opens the first voluntary Primary School at Yevateshwar, Tal. Satara.

1940 : Opens the first free and residential Secondary School : Maharaja Sayajirao High-School Satara.

1945 : Felicitations and presentation of a purse of Rs. 25,000/- by Merchants of Kolhapur.

1947 : Opens the first free and residential college : 'Chhatrapati Shivaji College', Satara.

1948 : Felicitations and presentation of a purse of Rs. 1,00,000/- by 'The Satara District Students' Congress', at the auspicious hands of Sant Gadge Maharaj.

: Felicitations and presentation of a Chevrolet car by his students.

1952 : Felicitations and presentation of a purse of Rs. 25,000/- by the workers of Kirloskar Borthers Ltd., Kirloskarwadi, at the auspicious hands of Hon'ble D.P. Karmarkar, Union Minister.

1954 : Opens the first college in rural areas :
'Sadguru Gadage Maharaj College', Karad

1955 : Opens a college of education at Satara.
Subsequently named in memory of Maulana Abul Kalam Azad as 'Azad College of Education'.

1959 : **January, 26 :**
"Padma-Bhushan" awarded by the President of India.

: **April, 4 :**
"D. Litt." conferred by the University of Poona.

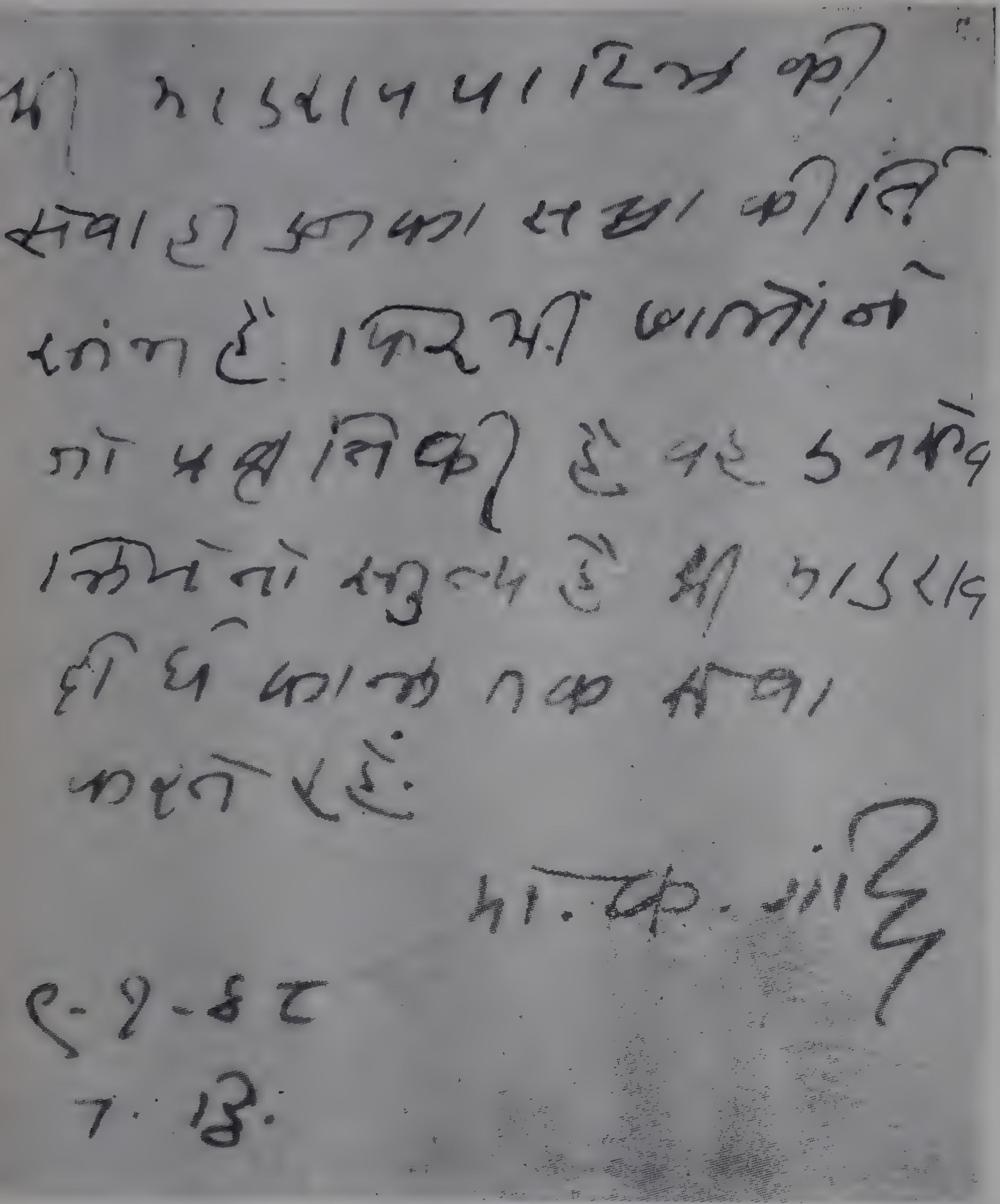
: **May, 6 :**
Felicitations and presentation of a purse of Rs. 1,00,000/- by the people from Ahmednagar District.

; **May, 9 :**
Breathed his last in Sassoon Hospital, Poona.

: **May, 10 :**
Cremation ceremony at Char-Bhinti (Gandhi Tekadi), Satara.

First batch of the first Cosmopolitan Hostel of the Rayat Shikshan Sanstha, with the founder, Karmaveer Bhaurao Patil

The Great Saint of Maharashtra Shri Sadguru Gadage Maharaj with Dr. B.R. Ambedkar and Karmaveer



श्री भाउराव पाटिलजी की
सेवा ही आपका सच्चा कीर्ति
स्तंभ है। फिर भी भाईओंने
जो प्रतिष्ठा की है वह उनके
प्रेमनो सबुत है श्री भाउराव
दीर्घ काल तक सेवा
करते रहें।

मो. क. गांधी

९-१-४८
न. दि.

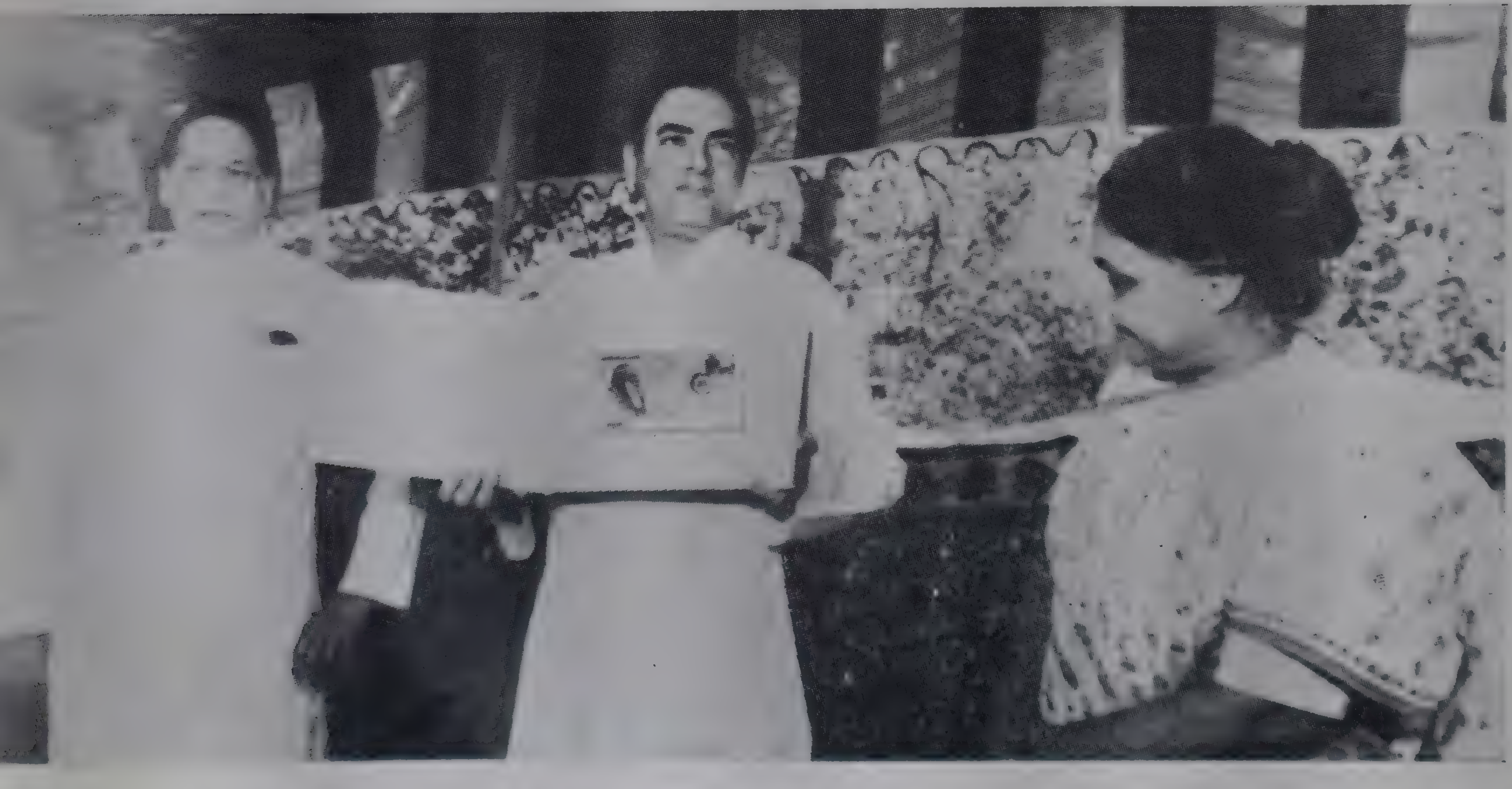
A message from the Father of the Nation, Mahatma Gandhi, on the occasion of the felicitation ceremony and presentation of Rs. one lakh to Karmaveer Bhaurao Patil by the Satara District Students' Congress.

armaveer Bhaurao Patil elcomes Dr. C.D. eshmukh, the then Union inance Minister, at the auguration of the ience wing of the hhatrapati Shivaji ollege, Satara.

Karmaveer Bhaurao Patil with Maharshi D.K. Karve

Soviet leaders Mr. Nikita Kruschev and Marshall Bulganin with Karmaveer

Karmaveer with Shri Y.B. Chavan who held the office of the President of the Rayat Shikshan Sanstha for 25 years after the Founder's demise



Prime Minister Rajiv Gandhi releasing a postal stamp in honour of the Karmaveer in New Delhi on 9th May, 1988

SENIOR COLLEGES CONDUCTED BY
THE RAYAT SHIKSHAN SANSTHA (*Contd.*)
Founder : Padma-Bhushan Dr. Karmaveer Bhaurao Patil

Swami Sahajanand Bharati College of Education, Shrirampur, Dist. Ahmednagar

Est. 1970 No. of Students : 167

Shri S.A. Anarase
PRINCIPAL

Shri Sadguru Gangageer Maharaj Science, Goutam Arts & Sanjeevani Commerce College, Kopargaon, Dist. Ahmednagar

Est. 1965 No. of Students : 3212

Shri B.R. Choudhari
PRINCIPAL

Annasaheb Awate Arts, Commerce, Hutatma Babu Genu Science College & Sou. Kusumben Kantilal Shah Arts, Commerce, Science Jr. College, Manchar, Dist. Pune

Est. 1966 No. of Students : 2195

Shri V.S. Rokade
PRINCIPAL

Maharaja Jivajirao Shinde College, Shrigonda, Dist. Ahmednagar
(Arts, Science & Commerce)

Est. 1982 No. of Students : 1239

Shri N.G. Waman
PRINCIPAL

Convocation

THE REAL CHALLENGE

Dr. M.R. Srinivasan, Chairman, Atomic Energy Commission and Secretary to the Govt. of India, Department of Atomic Energy, delivered the Convocation Address at the Fourteenth Convocation of Konkan Krishi Vidyapeeth. In his address Dr. Srinivasan stressed some of the emerging trends in Science that find application in increasing food production. He laid particular emphasis on the application of nuclear techniques and innovations in biotechnology in different areas of crop improvement and processing and preservation of foodstuffs. However, he observed, "our first priority should be to apply all our knowledge and scientific discoveries to overcome natural calamities, man-made shortages and faulty age-old techniques which are the stumbling blocks towards greater productivity". He said, "The challenges of today lie not in the fields of outer space or nuclear arsenals. No, the real challenge lies here in diseased hands held out for alms, in the hunger-stricken face of young children, in a parched land dying of thirst and a godown filled with pest infested grains. And who is better equipped to overcome these hurdles than you are today? Let this then be your commitment, your tryst with destiny". Excerpts

In spite of the substantial growth in gross national product the growth of per capita income in the last forty years has been far less than what has been registered in a number of developing countries. The rapid increase in population compounded with an already large population base has been the principal reason for our inability to eliminate poverty and improve living conditions significantly. It is unfortunate that in recent years this problem has failed to receive the kind of attention that it demands. In contrast, China which has a large population base and had a large growth rate has been able to come to terms with this problem. While we may not wish to adopt the coercive or compulsive methods of population control that China has adopted, it is essential that we reach a national consensus cutting across religions, regions, political parties and all sections of the intelligentia and the people at large. We should all unite to implement a policy which can within the next few decades reach a zero population situation. The present situation unfortunately does not give room for optimism that such a consensus is about to emerge but all of us who have any role in building up of public opinion must strive for reaching such a consensus. In addition to the question of large numbers of people, we also have in India the problem of rapidly increasing numbers of stray animals of all kinds. We appear to be reaching the limits of the biological resources to support such a large and increasing stray animal population.

Our country has been able to reach a marketable surplus of over 30 million tonnes of foodgrain. However, the last two years have witnessed weather aberrations, crop diseases and infrastructural limitation of scientific storage resulting in a drain in the buffer stock. At present total output is around 150 million tonnes which includes rice, wheat, cereals and pulses. A target of 178-183 million tonnes is envisaged during the end of 7th plan period. Production of oilseeds which stands at 13 million tonnes similarly needs to be increased to 18 million tonnes during the plan period. In order to overcome the existing constraints and accelerate the growth of production and productivity of cereals and pulses, research efforts have been intensified to develop high yielding varieties of wheat, rice and other major food crops.

Progress in breeding of crop plants depends upon selection of favourable combination of characters that are governed by genes and gene environment interactions. The heritable changes in DNA which are either naturally acquired or induced are known as mutations. In conventional plant breeding techniques, the desirable mutation available in germplasm collections are utilised to develop improved crop varieties. These represent spontaneous mutations that had occurred in the past and could survive in nature. The entire genetic variability within a species, which is referred to as gene pool, could be enhanced by available genetic techniques to produce desirable cultivated species. On the other hand a variety of plant species could be subjected to X-rays, gamma rays, beta rays, neutrons and chemical mutagens to produce induced mutations. The use of induced mutations in crop breeding programme is known as mutation breeding.

By far the most important application of nuclear techniques in the field of agriculture, which has high potential use in future, has been for improvement of crops. Induction of mutations employing ionizing radiations is a convenient technique for enhancing genetic variability in crop breeding programme. Several varieties of cereals, oilseeds, pulses and economically important plants like jute, with superior yields and resistance to disease have been evolved at Bhabha Atomic Research Centre (BARC) adopting the mutation breeding techniques. These mutants possessed desirable variations in leaf area, branching pattern, growth rate, partitioning efficiency cell size, protein and oil content. Any crop improvement programme generally involves five basic steps.

1. Identify and create genetically stable variations for desired traits (yield, disease and pest resistance, stress tolerance, etc.) ;
2. Select from these variations that individual(s) possessing ideal expression of desired traits ;
3. Incorporate the desired trait(s) to suitable agronomic background ;
4. Test for new variety over a wide range of habitat and for number of seasons, and
5. Release the new variety.

Based on these approaches, Nuclear Agriculture Division at BARC has developed improved varieties of pulses such as TAP-7 (Trombay-Akola Phaseolus-7), mung been; TAU-1 (Trombay-Akola Urid-1), black gram; Trombay-Vishaka-1 pigeon pea (Tur); and TAT-10 (Trombay-Akola Tur-10) pigeon pea. These varieties displayed early maturity and higher yields on field trails. They were found suitable for cultivation in the areas like Vidarbha in Maharashtra. In addition to pulses, groundnut TG-7 and Jute TJ-40 developed at BARC are included in the list of approved varieties. These certified seeds will be sold by the National and Maharashtra State Seeds Corporations. Besides these other strains of rice, groundnut, pigeon pea and black gram evolved at BARC are included in minikit for district trials at farmers' fields.

Recombinant techniques is another area in which giant strides have been made. As agricultural scientists you know that plant breeding is a laborious exercise, time consuming and requires extreme patience. It is both an art and a science. The division of labour in plant breeding is likely to be repeated and supplemented by newer biotechnologies which can be divided into two classes. culturing and gene transfer. Although genetic transfer is more promising for crop improvement than culturing, tissue culture techniques represent the limiting steps in the success of such transfer Genetic transfer can be made directly into cells, but these transformed cells are useless unless whole plants can be regenerated from them. Thus biotechnology and breeding in conjugation represent a powerful new force in creating product diversity to improve the outlook of agriculture. One can say that plant biotechnology is key to the next "Green revolution".

BARC scientists have developed expertise to eradicate the stem rust disease in wheat employing newer approaches of chromosome engineering. Two genes Sr-28 and Sr-27 from *Agropyron elongatum* and rye respectively providing resistance to stem rust were hybridized and transferred to Kalyansona wheat thus conferring high degree of disease resistance in this variety.

Efforts were also made at BARC towards crop improvement employing techniques of genetic engineering involving gene tranfer technology. More rightly called the recombinant DNA technology, the technique involves four main steps :

(a) isolation and identification of desired DNA sequence to be introduced,
(b) cloning or production of identical copies of such squences in bacteria,
(c) introduction of cloned DNA and its integration with the resident DNA in plant cells, and
(d) expression of the introduced genes.

The use of highly invasive vector like T_1-plasmid of the bacterium *Agrobacterium tumefaciens* enables scientists to insert bacterial genes into plants. This modern approach in using this genetic vector for transfer of desired gene(s) is in progress at BARC. Another important use of Agrobacterium is in the transfer of genes to plants to confer insect and disease resistance and tolerance to herbicides. By this method insecticidal protein genes obtained from *Bacillus thuringiensis* have been transferred to plants to evolve insect-resistant plants.

Genetic engineering has also opened new avenues to evolve a system wherein plants can use atmospheric nitrogen rather than nitrogen from soil. Plants are unable to directly use the dinitrogen (N_2) gas in the atmosphere. The very stable bond between the two nitrogen atoms of dinitrogen must be broken and the nitrogen should be converted to nitrate or ammonia before it can be assimilated by plants. On the other hand, several lower organisms are capable of doing this with ease. The role of symbiotic bacteria from the genus Rizobium in improving productivity of pulses and certain oilseeds is widely recognised. Genetic manipulation of nitrogen fixing bacteria to increase the fixing efficiency several fold can lead to greater productivity in crop plants. The nif genes have been transferred by recombinant DNA techniques among microbes but it is yet to be seen whether scientists will be able to transfer such a system to higher plants.

The next frontier to be explored is that of tissue culture. Plant and cell culture techniques better known as tissue culture are exploited in continuously generating identical plants. Tissue culture is essentially reproduction of life in test tubes. The concept of tissue culture centres around the fact that the plant cell has genetic information and inherent ability to develop into a new plant provided it is supplied with the right conditions to express that capacity. The outstanding advantage of tissue culture technique is the propagation of true progenies, ensuring uniform growth and productivity behaviour for each species in a given agroclimactic environment through successive generations. The potential benefits of these culture techniques are far reaching. By allowing one to grow enormous number of different cells, all potential plants, in a small area, it permits one to screen a large number of cell in a very short time and the method simplifies crop developments in a quick time.

Many crops of economic value have received attention at BARC for exploitation by tissue culture methods. As mentioned earlier, since the country is faced with a shortage of edible oil, efforts are being made to develop oil palm by this technique. Tissue culture of oil palm was initiated by using young leaf segments. By carefully monitoring the nutrients and manipulating the concentrations of growth harmones, it was possible to introduce in the callus tissues the development of an infinite number of embryos. By meticulous alteration in the nutrient medium conditions were created to allow further growth of a large percentage of embryos into leafy shoots. After a second change in the medium for root promotion, the leafy shoots began to display full roots culminating in complete plants. Thereafter, tissue culture derived oil palm plantlets were transferred to soil, nurtured for 8 weeks and were established in pots and in field. Tissue culture techniques have also been developed for mass multiplication of mulberry. Under a collaborative agreement this technology has been transferred to the Central Sericulture Research Institute, Mysore. Besides oil palm and mulberry, technology has been developed for mass production of sandal wood trees.

Thus it is evident that tissue culture offers a valuable adjunct to plant improvement without resorting to conventional breeding methods such as hybridization. Fusion of cultured plant cells permit the development of unique hybrid plants impossible to achieve through conventional sexual hybridization.

We now come to fertilizers and pesticides. Since the requirements nutrients in agricultural crops vary considerably with the soil, climatic conditions, plant species, etc., precise knowledge is needed on the type, amount, method and time of application of fertilizers best suited for specific soil crop combinations. Use of isotope labelled fertilizer material permits such determination. ^{15}N and ^{32}P labelled materials will find increasing use in the evaluation of different nitrogenous and phosphate fertilizer. Studies carried out at BARC in this area are primarily aimed at evaluating the degree of water solubility desirable in phosphate fertilizers and on the efficiency of the nitrate against ammonia fertilizers, specially for rice. BARC has also developed a process for the enrichment of ^{15}N in the form of nitric acid which could be incorporated in fertilizers in minute amount. Production of this isotope has facilitated the testing of the efficiency of nitrogenous fertilizers.

The indiscriminate use of pesticides has become a common practice in Indian agriculture. However, there is a great concern regarding the impact on ecology and possible hazards arising out of residues finding way into man through food. Fungicides are widely used for treating seeds, soil and as foliar sprays for control of pathogens. During storage after harvest also insecticides are used routinely. Some of these chemicals are likely to persist and gain entry into foods such as vegetables, fruits, grains and processed foods. Isotope labelled fungicides and insecticides are useful in studying a wide variety of problems relating to persistence of these residues in plant parts and grains and their biodegradation pattern. Another development in this field is the identification of several biopesticides which are natural pathogens to which pest cannot develop resistance. *Bacillus thuringiensis* which is effective against more than 100 species of lepidopterans, is increasingly being used in making suitable insecticide formulations used in the agricultural sector.

And last but not least, advanced techniques of food presrvation will play a vital role in the Indian economy. I have stressed some of the emerging trends in science that find application in increasing food production. Here I have laid more emphasis on the application of nuclear techniques and innovations in biotechnology in different areas of crop improvement. I will digress from this to another important aspect that is processing and preservation of available food for equitable distribution to human populations. What are the needs for better preservation methods? A conservative estimate puts a loss of 20-30% in food on account of attack by rodents, insects and microorganisms, of which many may be hazardous to health. The food losses due to unhygienic practices of handling and storage could be salvaged by means of dedicated application of scientifically proven methods of processing and preservation. This calls for improvement in post-harvest storage and preservation practices.

One of the more recent methods of preserving food is by application of ionizing radiations, which is often referred to as food irradiation. This is essentially a physical method. In this method the food item is exposed to either gamma radiations emanating from isotopes such as Cobalt-60 or Caesium-137 or electrons generated from linear accelerators. Food irradiation complements the presently available traditional methods that constitute a remedy against microbial and biochemical spoilage of foods. It also represents a unique process for food items that are not suited for heat treatment (e.g. fresh fruits and vegetables, grains, spices, etc.) or where there could be concern about hazardous residues from chemical fumigants. In addition food irradiation offers many advantages over conventional preservation methods. The advantages of food irradiation include:

(a) retention of freshness,
(b) suitability to process after packing,
(c) availability of hygienic food products possessing extended shelf-life,
(d) conservation of energy, and
(e) freedom from toxic chemical residues.

Research over the past twenty years in BARC has demonstrated the feasibility of a number of applications. Radiation processing has found potential applications in inhibiting sprouting of onions and potatoes (0.15 kGy), delayed ripening of fruits like banana and mango (0.5 kGy), disinfestation of grains like wheat (0.75 kGy), extension of shelf-life of fishery and meet products by suppressing the spoilage microflora (2.5 kGy), elimination of pathogens such as Salmonella and Vibric from frozen sea foods like shrimps (4.0 kGy) and microbial decontamination of spices (10.0 kGy).

The feeding trials performed elaborately on animals with a variety of irradiated food products have conclusively demonstrated that ingestion of such food does not lead to any adverse consequence to health. Irradiated food is wholesome, hygienic and safe for human consumption. Extensive work done in India and similar studies from other countries regarding the safety and wholesomeness of irradiated food was carefully scrutinized by a joint FAO/IAEA/WHO Expert Committee. Their unanimous verdict was unconditional clearnce for any food irradiated upto 10.0 kGy and such foods need not undergo toxicological evaluation. Government of India has since approved in principle the adoption of the technique irradiation as a method of preservation of foodstuffs. A National Monitoring Agency under the Ministry of Health and Family Welfare was set up for dealing with all aspects of irradiated foods. National Monitoriing Agency has given clearance for irradiation of frozen sea foods and spices for export. At present 29 countries have accorded approval for the consumption of nearly 40 items of irradiated food products.

We have been dealing so far with efforts of scientists, associated with several national laboratories and universities in enhancing food production. However, the fruits of their research have not been passed on to the ultimate users completely. There exists a lacuna in the transfer of laboratory technologies to the land. In view of this, it is necessary that extension programmes handled by competent people who could interact both with scientists and farmers with ease should be provided greater impetus. The transfer of technology programme of ICAR involves four major programmes, namely, National Demonstrations, Operational Research Projects, Krishi Vigyan Kendras and Lab to Land Programmes. An attempt to give more emphasis to coordinate scientific farming overcoming the existing constraints based on traditional, cultural and economic aspects should stimulate higher output of crops. In addition to this, farmers should be given education regarding modern agricultural practices. This education could provide scientific bases for institutional development, qualititative improvement in farm practices and manpower development. Education in terms of use of improved variety of seeds, better water management, application of proper fertilizers and pesticides, and study of soil structure would certainly create new awareness in farmers on proper use of their land.

In conclusion, I would like to remind you of Gandhiji's declaration that the future of India lies in her villages. It is a fact that even today these villages are almost entirely dependent on farming for their very existence. Therefore, our first priority should be to apply all our knowledge and scientific discoveries to overcome natural calamities, man-made shortages and faulty age-old techniques which are the stumbling blocks towards greater productivity. I had begun this address by saying that a convocation is a time for some advice and this is what I have to offer. No man is an island—it is only by working towards the common good that he can find fulfilment. The challenges of today lie not in the fields of outer space or nuclear arsenals. No the real challenge lies here in diseased hands held out for alms, in the hunger-stricken face of young children, in a parched land dying of thirst and a godown filled with pest infested grains. And who is better equipped to overcome these hurdles than you are today? Let this then be your commitment, your tryst with destiny. □

University of Jodhpur

Academic Staff College

A PROFILE

Established with the help of UGC, as an independent Institute within the University system, the Academic Staff College of University of Jodhpur came into existence in January 1988. It draws up on all the resources available in the University of Jodhpur as well as other institutions and organisations of the country. It is specially built to attune University and College teachers to the requirement of their responsibilities in the changing world as also to develop in them skills and attitudes necessary for the realisation of their individual, occupational and organisational objectives.

Its catchment area is limited to the Universities of Jodhpur and Udaipur and their constituent colleges. Presently, the Government of Rajasthan has also attached degree and postgraduate colleges of Jodhpur, Bikaner and Udaipur divisions of Rajasthan to this college for the purposes of training.

The Academic Staff College has so far organised three "Four Weeks' Orientation Programmes" of newly recruited University and College Teachers. During the current session, four more Orientation Programmes are proposed to be organised.

The programmes have been designed to develop basically three types of skills among the participants, viz., Human Relations Skills, Pedagogical Skills, and Conceptual Skills. As such the programmes focus mainly on six areas :

1. Organisational behaviour and Personality Development,
2. Social, Political and Economic Environment of Education and the Indian Education System,
3. Philosophy of Education, and Responsibilities of College Teachers,
4. Educational Psychology,
5. Pedagogy of Effective Teaching, and
6. Management of Education.

In the programmes conducted so far, as many as eleven methodologies of training have been adopted. These are lecture-cum-discussion, micro lab, role playing, group discussion, group work, In-basket exercise, case study, brainstorming, panel discussion, seminar and experiential learning through audio-visual techniques.

Broadly, the Staff College plans to organise five types of programmes in future :

1. Orientation Programmes for newly recruited university and college teachers;
2. Refresher courses to develop subject competency in university and college teachers;
3. Executive development programmes for college principals and administrative officers of the universities;
4. Specialised courses on Education Technology, Computers and Research Methodologies; and
5. Diploma courses in international languages like Russian, French and German

Academic Staff College also intends to promote research in "Effective College Teaching" and "Educational Administration" leading to Ph.D. degrees. ☐

Academic Staff College at JNU

The Academic Council of the Jawaharlal Nehru University is reported to have approved the setting up of an Academic Staff College to expose new entrants into the teaching profession to the development in knowledge, research methods and the processes of communication of knowledge to students. The proposed college would focus upon orientation programmes for teachers in respect of general academic environment as well as the developments in the field of their studies in specialisation.

Headed by a Director, the Academic Staff College shall have two-tier advisory bodies to guide its activities in respect of academic programmes. The General Advisory Committee shall advise on formulation of general direction and orientation of the teaching programmes including identification of subjects for upgradation training; all matters of policy programmes and on matters in regard to development, planning and creation of infrastructure. The Subject Advisory Committee shall formulate the general direction and structure of subject related programmes and prepare the module for the subject upgradation programme. This Committee shall also design the various courses in accordance with the availability of resources and the needs of the trainees.

The selection/nominations of trainees to the proposed Academic Staff College shall be on all-India basis since the University has an all-India responsibility in terms of the JNU Act.

The training at the college shall have, as far as possible, an inter-disciplinary focus and the methods adopted shall provide a healthy combination of natural sciences with social sciences and humanities.

The entire training programme would cover a period ranging between six and eight weeks. Until the college has gained sufficient strength and experience, it shall have only two modules—(a) General Orientation, and (b) Subject Upgradation. ☐

University of Kerala

Centre for Women's Studies

Centre for Women's Studies of the University of Kerala is one of seven Centres originally recommended by the UGC Standing Committee on Women's Studies and one of the four Centres finally selected for UGC support. The Centre was started in November 1986 and was formally inaugurated in January 1987 by Smt. Margaret Alva, Union Minister for Women and Child Development. Dr. P.K.B. Nayar, Professor and Head, Department of Sociology of the University is the Honorary DIrector of the Centre.

The Main objectives of the Centre are :

(1) to function as a nodal agency for teaching, research, consultancy, training and extension in the sphere of women's studies and women's development in Kerala, (2) to act as a catalyst and force for conscientising men and women of all categories, classes and levels about women's issues in Kerala, (3) to disseminate information on women's position in Kerala for the purpose of policy and action and, for this purpose, (4) to promote solid and substantial library and documentation facilities and build up a strong data-base on women in Kerala.

To carry out the above objectives, the following programmes have been formulated (1) review existing curricula and courses of study in various disciplines with a view to build the women's dimension in them, (2) design courses and course materials in women's studies for teaching at all levels in the University in collaboration with discipline departments, (3) identify and prioritise issues concerning the position of women in Kerala, draw up a research agenda and carry out studies on priority agenda, (4) encourage the University academic community including the colleges to do research on these priority areas or on their areas of special interest in women's studies, (5) spread awareness and consciousness about women's issues among different categories and levels of people both within and outside the University system, (6) prepare reports on the status of women in Kerala and profiles of women in each of its districts, (7) Organise *Women's Development Units* in the colleges to mobilise their human resources for developing and strengthening women's studies and development programmes, and (8) promote extension in the community involving teachers, students and activist groups in the improvement of women and promotion of their interests.

Curriculum Development

Even before the Centre was formally established, the Academic Council of the University at its meeting in October, 1986 passed a resolution accepting the directives contained in the National Policy on Education, 1986 (Empowerment of Women) and the Programme of Action 1986. The resolution urged all the Faculties and Boards of Studies in the University to review and revise their syllabi to remove sexist bias and incorporate elements of gender justice for empowerment of women.

Armed with this resolution and with financial support from the U.G.C., the Centre organised a Workshop for teachers in the following disciplines at the undergraduate level—Economics, History, Islamic Studies, Politics, Psychology, Sociology, Law and Education—to revise the syllabi in their disciplines. The recommendations of the workshop were then placed before the respective Boards of Studies at their next meeting in September-October, 1987. All these Boards accepted the recommendations and they were then placed before the Faculties (Social Sciences, Education and Law). These Faculties also approved the recommendations. The recommendations then went before the Academic Council of the University at its meeting on May 27, 1988 and the Council approved of them *in toto.* It is expected that the new syllabi will be implemented from the academic year 1988-89.

There are two more steps required for the completion of the exercise at syllabus revision at undergraduate level in the above three Faculties. These are : (1) Collecting teaching aids and materials on the revised syllabi and placing them at the disposal of teachers, and (2) Orientation course to the teachers in the new philosophy and mode of teaching of the revised syllabi. These will be done discipline-wise in the current academic year.

Other Activities

On the initiative of the Centre for Women's Studies, a programme of encouraging the affiliated colleges to establish Women's Development Units in them has been taken up. The Government Women's College, Trivandrum has already established such a Unit and has approached UGC for financial assistance. The other two Women's Colleges in the city (NSS College for Women and All Saints College) have taken up the matter and will establish the Unit during this year

(1988-89). A Seminar for representatives from all the affiliated colleges will be held in September 1988 to conscientise the teachers on the need for such Units in their colleges and to help them establish these Units. The College Principals to whom circulars were sent on the subject have enthusiastically welcomed the idea and have nominated their representatives for the seminar. It is hoped that by the end of the academic year, all the affiliated colleges would have established Women's Development Units on lines contained in the UGC brochure "Women's Studies in Universities".

The Centre has acquired about 110 books for its library from the funds sanctioned by UGC. More books and Journals will be acquired during the current year.

The Centre also proposes to start publication of Journal entitled *Indian Journal of Women's Studies* for which clearance from the Registrar General of News Papers has been obtained. As soon as the University approval is received, the first issue will go to the readers.

The Centre will shortly organise a Workshop on Research Methodology in Women's Studies for actual and potential researchers in this area. This is expected to stimulate scientific approach to Women's issues and problems.

Fellowships for Studies in Canada

Shastri Indo-Canadian Institute has invited applications for two annual fellowships each in the areas of Social Sciences and Humanities, and Women in Developmen for the academic year 1989-90. The condidates for fellowships in Social Sciences and Humanities are expected to possess proven ability for research and teaching and to concentrate on a specific project of study in Canada from a comparative perspective on Canada-India topics. The fellowships are tenable for one academic term and the Institute well bear the cost of travel of selected scholars to and from the designated university. The Institute will also pay a maintenance allowance of Canadian $1500 per month for a maximum period of 4 months and a sum of Canadian $500 for purchase of books and personal effects. Selected candidates must undertake to leave for Canada by 1st September, 1989.

Fellowships in the area of Women in Development are open to senior Indian scholars for a lecture and research programme to help develop expertise in the area of Women in Development at selected Canadian universities. The candidates should be reputed scholars in India with demostrated ability for research and lectures on Women in Development and will be expected to assist individuals or groups in the development of research expertise on Women in Development in appropriate Canadian universities. The fellowships are tenable for one acadmic term (13 weeks) and the Institute will bear the cost of travel, pay a maintenance allowance of Canadian $2500 per month upto a maximum of 4 months and a sum of Canadian $500 for the purchase of books and personal effects. Selected candidates willing to take up the fellowship will be required to undertake to leave for Canada by Sept. 15, 1989. Applications inclusive of detailed bio-data, research proposals and list of lecture topics must reach the Institute latest by Nov., 1988.

Further details can be had from the Resident Director, Shastri Indo-Canadian Institute, 92, Golf Links, New Delhi-110 003.

Symposium on Acoustics

The Acoustical Society of India, in collaboration with the Department of Physics, Indian Institute of Science, Bangalore, will organise a special symposium on Acoustics on 25-28 October, 1988 in honour of Professor C.V. Raman's Birth Centenary. The Symposium will cover various themes in acoustics such as Musical Acoustics, Physical Acoustics, Speech and Hearing, Environmental Acoustics, Underwater Acoustics, BIO and Medical Acoustics, Chemical and Biological Applications, Architectural Acoustics, Vibrations and Noise, Acoustic Emission and N.D.T., Transducers and Marerials, Geo and Aero Acoustics, Acoustical Signal Processing, and Engineering Applications.

Nearly 150 scientists from all parts of the country and abroad are expected to participate in the Symposium. Special plenary seesions are also planned on musical acoustics, architectural acoustics and physical acoustics, of special significance to the work of Professor Raman.

Details with regard to participation in the symposium may be had from Prof. E.S. Rajagopal or Prof. S.B. Ramakrishna, Department of Physics, Indian Institute of Science, Bangalore 560 012.

Redesigning the Curriculum

The Bhavnagar University organized a two-day seminar on redesigning of the curricula, teaching methods and reformation of examination patterns. Attended by about 225 college and university teachers, the seminar suggested important changes in the first and second years' courses, reviving tutorial system, introduction of internal evaluation and developing question bank in science subjects.

Speaking on the occasion, the Vice-Chancellor Mr. Dolar Vasavada said that the University Grants Commission had asked the universities to revise the undergraduate curricula to make them job oriented and more relevent to the needs of the society. Greater emphasis had to be laid on designing new courses keeping in mind the implementation of New Education Policy at primary and secondary levels. He believed that as the seminar was a beginning of a long chain complex academic reaction, periodic progress made in each faculty would be monitored by the university.

In his inaugural address, Mr. B. K. Mehta, former justice of the Gujarat High Court, elaborated how teachers' interest and knowledge and their love towards the students helped in moulding the character of young generation. Prof. R. S. Trivedi, Chairman, Gujarat Higher Secondary Board, who delivered the Keynote address, said that the incentive and feedback system were absent in Indian universities. Monetary incentives were limited by financial constraints, while freedom, creativity and a feeling of academic romanticism were limited by inherited backwardness in administration and management.

Central Varsity Status for Jamia Millia

Parliament has recently approved a Bill seeking to make the historic Jamia Millia Islamia a full-fledged Central University. This will take effect from December this year.

Shri P. Shiv Shanker, Union Minister for Human Resource Development, who piloted the Bill, assured the House that historic and basic character of the national institution would be preserved.

All decisions regarding medium of instruction and examination would be taken by the university's executive council. Government would not interfere with its working in any way, he said.

Entrance Exam for ISM

The Indian School of Mines, Dhanbad, will hold Entrance Examinations for undergraduate admissions to different courses for the 1989-90 session on 6th and 7th May, 1989 at different centres of India. Further details can be obtained from the Deputy Registrar (Academic), Indian School of Mines, Dhanbad-826004.

Course in Computer Programming

Garware Institute of Career Education and Development affiliated to the Bombay University proposes to start a diploma course in computer programming and system analysis. The institute is planning to install a mini computer and offer advanced computer training programme in selected areas.

Three Indians Graduate from Space Varsity

Three Indians were among the 104 men and women from 21 nations who are reported to have recently completed an intensive nine-week study and research programme to become the first graduates of the International Space University (ISU) near Boston. The new university, based temporarily on the campus of the Massachusetts Institute of Technology (MIT), is a non-profit non-governmental organisation founded in April, 1987, to serve industrial, academic and governmental institutions concerned with space research and development. Its long-term goal is to become a worldwide centre for training space professionals.

The three Indians who all share an interest in space exploration and development, are N.M Hirani, who received her MBA with a specialisation in international business from Wilfird Laurier University in 1988. Hari Mohan Saxena, a veterinary pathologist currently pursuing a Ph.D. degree in cancer immunology at Nottingham University in England and Madhu Thangavelu, an architect who is pursuing graduate studies in building science and architecture at the University of Southern California.

Literacy Award for Prof. Parikh

Prof. Ramlal Parikh, Vice-Chancellor of Gujarat Vidyapeeth, Ahmedabad, has been selected for the 1988 Nehru literacy award of the Indian Adult Education Association (IAEA).

The award has been given to Prof Parikh for his outstanding contribution to the promotion and development of adult and continuing education.

Prof Parikh was the Chairman of the Gujarat State Adult Education Board in 1977 when about 170 voluntary organisations participated in the national adult education programme in the state. He also served as Chairmain of the Standing committee of adult and continuing education of the University Grants Commission from 1979 to 1982.

The Tagore memorial award for women's literacy has been awarded to Mrs Aunurupa Mukherjee, founder-president of the Tripura Adivashi Mahila Samiti, Agartala.

Mrs Mukherjee has been chosen

for her pioneering role in eradicating illiteracy among tribals, and backward classes of women in Tripura.

She has the distinction of achieving cent per cent literacy in about 20 villages of the state in the face of heavy odds.

Hardwari Lal Heads ICAR Panel

Mr Hardwari Lal, M.P. and former Vice-Chancellor, Maharshi Dayanand University, Rohtak, has been appointed Chairman of a committee constituted by the Indian Council of Agricultural Research (ICAR) to monitor the performance of the agricultural universities in the country. The committee will visit various agricultural universities in the country with a view to looking into the relevance of research and education programmes.

The other members on the committee are Mr. Pratap Rao Bhale M.P., Mr. G.C. Juneja, former FAO Consultant, and Dr. C. Prasad, Deputy Director-General (AE). Dr. Prasad will act as Member-Secretary of the committee.

News from Agril. Varsities

Vegetable Seed Extracting Machine

Dr. S R. Verma, Senior Research Engineer (presently working as Chief Adviser at the National Centre for Agricultural Mechanization, Ilorin, Nigeria) and Dr. Hari Singh, Senior Seed Production Scientist of the Punjab Agricultural University (PAU) have designed and developed an 'Axial-Flow Vegetable Seed Extracting Machine' for extracting seeds from the fruits of different vegetables, namely, tomato, brinjal, chillies, cucumber, watermelon, squashmelon, longmelon, etc. The machine, developed with the financial assistance of ICAR, works on the principal of "wet seed extraction" and uses freshly harvested ripe vegetable fruits.

The vegetable Seed Extracting Machine comprises frame, feeding chute, primary chopping chamber, crushing chamber, seed collecting chamber, shaft, seed outlet, pulp (waste material) outlet and centrifugal pump. Vegetable fruits are cut into small pieces with blades in the primary chamber and crushed finely by means of axially arranged blades fixed to rotor shaft. Apart from the blades, conveying rakes are provided in two rows on the shaft which move the pulp and waste material along with the shaft length to eject out the waste material from the waste outlet. The flow of material through the machine is axially to rotor shaft. Three pipes at 2.5 cm diameter and with holes, one on either side and one on the top cover of the machine, spray water under pressure by a small centrifugal pump. A continuous flow of water through the holes of these pipes must be ensured for the proper working of the machine. Sufficient water should be available at the site of the machine, and as such the machine should preferably be installed near a tubewell. The water flowing through the seed outlet should be recycled into the machine since it may block the holes of the pipes. The water sprayed washes out the seeds and some fraction of the finely crushed fruit material, which passes through the openings of the concave screen provided at the crushing chamber is ejected out through the seed outlet. Concave screen can be easily removed and refixed to suit seed sizes of different vegetables small (5 mm), medium (10 mm) and large (12.5 mm) openings. Vegetable Seed Extracting Machine is operated with 2 h p. electric motor. Three persons are required for its working, two for feeding vegetable fruits and one for removing the pulp from the screen placed below seed outlet on a tub. The water containing finely crushed seed material is collected in a trough. Seeds are separated by decantation of water from the trough. Seeds being heavier settle down and remain at bottom of the trough. Fresh water is added 2 to 3 times to get clean seed and every time water is removed by decantation. The seeds thus obtained are sun dried in thin layers.

Tomato seed needs special treatment since it is surrounded by mucilaginous material. Therefore, the extracted seeds should be dipped in a solution of concentrated hydrochloric acid (commercial grade) at the rate of 8 to 10 ml per kg for 15 to 20 minutes. The mixture should be continuously stirred. Thereafter, the seeds should be thoroughly washed with water. The seeds are dried under the sun in thin layers.

The machine can extract seeds at the rate of 5.49, 3.78, 9.42, 4.68, 3.60, 6.60 and 1.42 kg seeds per hour of brinjal, tomato, chillies, summersquash, watermelon, squashmelon and cucumber respectively. Maximum seed loss to the extent of 5.86 per cent in tomato followed by 5.0 per cent of cucumber was observed. Seed germination is higher with mechanical extraction in comparision to manual extraction.

Wheat Research Workers Workshop

Dr. N.S. Randhawa, Director General of Indian Council of Agricultural Research (ICAR) said, "There is a large gap in productivity levels of important wheat growing states ranging from 1146 kgs/hec. in M.P. to 3530 kgs/hec in Punjab. Therefore, the problems in low productivity in some of states need to be carefully reviewed and action plan needs be worked out for future". Dr. Randhawa was inaugurating the 27th All India Wheat Research Workers Workshop held at Haryana Agricultural University (HAU). He urged upon the scientists to redouble their efforts in combining valuable genes for generating more efficient genotypes in wheat crop.

Referring to future problems Dr. Randhawa said, "In intensive agricultural areas liks Punjab, Haryana and Western Uttar Pradesh soil health problems have become serious. The deficiency of different nutrients such as phosphorus and zinc have become common. Reports of deficiency of micronutrients are appearing from different parts of Punjab and Haryana. Spread of alkalinity and salinity is another alarming situation."

Dr. Swarup Singh, Vice-Chancellor, HAU who presided said that there could be no lasting solution to the food problems of the world until a permanent balance was established between food production and human population. Population throughout the world had doubled between 1930 and 1975, and still the rate of increase was very high. Therefore, we cannot afford to relax on the food effort to revolutionize agricultural production by developing improved technology.

Dr. Singh asked the scientists to encourage leguminous crops as they help in fixing substantial amount of nitrogen in the soil and also provide nutritive food and forage. He said scientists should also make concerted efforts to develop effective nitrogen fixing symbionts in cereals. Rice farmers in China have effectively used a symbiotic system based on the floating water fern Azoll spp. which harbours a nitrogen fixing blue green algae which fixes substantial quantities of nitrogen. Such interesting discoveries deserve additional intensive research in this field.

He reminded the scientists that the increase in labour cost and static budget provisions have added to the problems. Therefore, reorientation in research approaches is needed to cut down the expenditure but without any deviation from the basic objectives.

About 300 delegates from all over the country and Australia, Afghanistan, Mexico, Nepal, Bhutan, etc. participated in the four-day workshop.

Rabi Fodder Workshop

Dr Harbhajan Singh, Director of Animal Husbandry, Punjab, while addressing a two-day workshop on 'Rabi Fodder Production and Conservation' held at the Punjab Agricultural University (PAU) said that Punjab produced 10 per cent of the total milk production of the country

INTER-UNIVERSITY YOUTH FESTIVALS 1988-89

Zone	Venues	Dates	Contact Cultural Coordinator
East	Sambalpur University, Sambalpur (Orissa)	Oct. 12-15, 1988	Dr. K.C. Dash NSS Coordinator Sambalpur University Sambalpur
South	Bharathidasan Univ., Tiruchirapalli Tamil Nadu	Oct. 25-28, 1988	Prof. H. Md. Salahudeen NSS Coordinator Bharathidasan Univ., Tiruchirapalli
North	C.S. Azad Univ. of Agriculture & Technology, Kanpur U.P.	Nov. 13-16, 1988	Dr. D.C. Kulshrestha Dean, Students' Welfare C.S. Azad Univ. of Agriculture & Technology, Kanpur
West	Devi Ahilya Vishwavidyalaya, Indore (M.P.)	Nov. 20-23, 1988	Dr. R.K. Dubey, Dean, Students' Welfare, Devi Ahilya Vishwavidyalaya, Indore
National	Indian School of Mines, Dhanbad	Jan. 31 to Feb. 4, 1989	Prof. R.K.S. Chouhan Dean, Students' Affairs Indian School of Mines, Dhanbad

and was much ahead in milk production as compared to the other States of the country. He pointed out that non-availability of certified seeds of different fodder crops in sufficient quantity was a big bottleneck in fodder production and exhorted the PAU experts to devise a matching technology for enhancing the fodder production. Dr. Singh urged that a bulletin on cultivation, care, seed production and preservation of fodders be published for the information of field workers and fodder growers of Punjab. He emphasised that specific fodder production technology be devised for the economically backward Kandi areas of the State where scarcity of fodders was hampering the animal husbandry development programme.

Dr. Sukhdev Singh, Vice-Chancellor of the PAU in his inaugural address, said that since it was not possible to enhance the area under fodder, it was necessary to increase production per unit area to provide green fodder in ample quantity to the farm animals. The Vice-Chancellor exhorted that the farmers should be educated about proper cultivation and care of fodders on scientific lines and their preservation in the form of hay and silage. Dr. Sukhdev Singh emphasised the need of feedback by the field staff to help streamlining the research work at University. The State Government was advancing liberal loans to the educated youth for setting up dairy farms, he added.

Dr. K.S. Nandpuri, Director of Research of the PAU while highlighting the research activities in respect of rabi fodder crops said that livestock population of Punjab was 6.4 million adults whereas the State produced 39 million tonnes of green fodder. From the present production, he said, about 15 kg of green fodder was available per animal per day against 40 to 45 kg needed per day. Dr. Nandpuri further observed that BL 22, a late maturing variety of Berseem recommended for North-Western and temperate zones, had outyielded S-99-1 and Mascavi by a margin of 26.9 and 17.2 per cent in green fodder yield and 36.7 and 27.2 per cent in dry matter yield respectively. This variety was more resistant to stem rot disease. He said that OL 256, a promising strain of oats, yielded 690 quintals of green fodder and 122 quintals, of dry matter and 31.7 quintals seed per hectare. Dr. Nandpuri added that Berseem or Lucern or Rye green hay could be used for replacing costly concentrate and that 1300gm of Berseem/Lucern/Rye grass could replace 1 kg concentrate mixture in growing and lactating dairy animals. Silage from winter maize stover can be prepared by spraying 500 gm urea+1.5 kg molasses along with 10 to 15 litres of water per quintal stovers. Such silage becomes complete maintenance ration for adult dairy animals, he said.

Attention Scientists and Technologists

Indian Expertise in Science and Technology

The Research Cell in Economics of Education of the Association of Indian Universities is conducting a survey of Indian expertise in science and technology in the University sector. It is proposed to prepare a comprehensive database of the skills, knowledge and facilities of the university level institutions as well as a directory of experts in various disciplines of science and technology. The survey is also intended to catalogue the expertise and current research work of Indian scientists and technologists in various fields of science and technology, and will be used as an input for the compilation of a comprehensive database on the scientific and technical manpower in the country. The database will provide a ready reference to the industry, commerce and allied sectors of Indian economy for identifying experts in the relevant fields.

The scientists and technologists engaged in teaching and research in the universities and university level research institutions in India **at the lecturer or equivalent and above levels only** are requested to fill-up the prescribed form, which can be had from the undersigned. The completed form should be returned latest by **September 30, 1988.**

The responses from the academic and research staff are solicited, and their cooperation would be highly appreciated in our venture to build up a comprehensive database.

For the prescribed form, kindly write to:

M M Ansari
Joint Director
Research Cell, Economics of Education
Association of Indian Universities
AIU House, 16 Kotla Marg
NEW DELHI 110 002

SENIOR COLLEGES CONDUCTED BY
THE RAYAT SHIKSHAN SANSTHA *(Contd.)*

Founder : Padma-Bhushan Dr. Karmaveer Bhaurao Patil

Rajarshi Chhatrapati Shahu College, Kolhapur
(Arts, Science & Commerce)

Est. 1961

No. of Students : 1032

Shri A.H. Garud
PRINCIPAL

R.B. Narayanrao Boravake College, Shrirampur, Dist. Ahmednagar
(Arts, Science & Commerce)

Est. 1960

No. of Students : 2047

Shri P.A. Panwal
PRINCIPAL

Science College, Lonand Tal. Khandala, Dist. Satara

Est. 1986

No. of Students : 99

Shri D.G. Mahanvar

PRINCIPAL

Pandharpur College, Pandharpur, Dist. Solapur

(Arts, Science & Commerce)

Est. 1960

No. of Students : 3596

Shri N.N. Bhagare

PRINCIPAL

Arts & Commerce College, Madha, Dist. Solapur

Est: 1970 No. of Students : 653

Shri D.B. Pathan
PRINCIPAL

Balwant College, Vita Tal. Khanapur, Dist. Sangli
(Arts, Science & Commerce)

Est. 1963 No. of Students : 1424

Shri M.M. Kadam
I/C. PRINCIPAL

BOOK REVIEW

Limited, But Useful

Ramachandran C.M. Problems of Higher Education in India 263p. Rs. 160.00 Delhi, Mittal Publications.

M.V. Pylee*

The title of the book, Problems of Higher Education in India, is misleading as nowhere in the book the author claims to deal with the problems of higher education in India as a whole. In fact, the book deals with problems of higher education in the State of Kerala only. However, even here, it deals with only a segment of higher education in the State, namely, the Arts and Science Colleges with special reference to financing of these institutions. That means the study does not touch the problems of higher education in the State in the fields of technology, medicine or agriculture.

Again, a study which claims to deal with problems of higher education cannot confine itself to any two of these problems. namely, the problem of size, i.e., the explosive growth in the number of these institutions in a relatively short period of time and the evil consequences of such growth, and the financing of these institutions which has become a big burden on the rather poor resources of the State. The study does not attempt to deal with the many other important and relevant complex problems of higher education in the State; for that matter, indeed anywhere else in India, such as the erosion of credibility and functional utility of higher education, politicisation of the college and university campuses, unionisation of students, teachers and the non-teaching employees, unrest and violence in the campuses often resulting from the so-called popular elections to student unions, erosion of university autonomy as a consequence of political and administrative interference from above, the breakdown of the examination system, poor quality of research, lack of basic facilities such as libraries, laboratories, play grounds, etc., indiscipline of every conceivable form, low morale, frustration and indifference among teachers of all categories and several others. Any study which deals with problems of higher education in India can ill-afford to ignore an analysis of these problems. The fact that the book under review has not dealt with them is a serious drawback of the study. But then, it may be difficult to deal with all these problems in the same study.

More specifically, the study has analysed the development of higher education in the State of Kerala in general with special reference to the growth of Arts and Science colleges since the formation of the State in 1956. Prior to that year the Malayalam-speaking southwest region of India which constitutes the present Kerala State was under three political systems, the Princely State of Travancore, the Princely State of Cochin and the British Indian District of Malabar which formed a part of the old Madras Presidency. Even though fast expansion in the size of higher educational institutions is an all-India phenomenon since Independence, the magnitude of the problems due to expansion might vary from State to State and is found to be influenced by the socio-political conditions of each State. Hence the author rightly justifies a separate study to pin point the salient features of higher education in the State of Kerala.

In the first chapter a description of the study is given in terms mainly of its objectives, its methods and sources of data. The second chapter deals with a brief report of the researches undertaken so far with a view to analysing the various aspects of higher education in the country as a whole as well as some other countries of the world. The third chapter traces the history of the development of higher education in India as a whole. Chapter four deals with the development of higher education in Kerala focussing attention on the problems it generated in the course of its growth. Within a period of less than twenty years (1957-76) the number of Universities and Arts and Science Colleges which form the core of the system of higher education, had made a spectacular growth. It also analyses the enrolment trends in the University Departments and in Arts and Science Colleges during the same period.

The trend of growth in public expenditure on education in general, focussing attention on the various aspects of the revenue and expenditure of the Universities and Arts and Science Colleges, is the subject matter of chapter five. The public expenditure on education

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including higher education has been rising year after year during the period of study. Nearly forty per cent of the State's revenue has been spent for the maintenance of educational institutions in the State. But in spite of this large allocation of funds, higher educational institutions in the State are facing difficulties due to lack of sufficient finance to meet their increasing needs.

The conclusions of the study briefly are the following : The development of modern education began in the former State of Travancore in the beginning of the nineteenth century and the neighbouring State of Cochin followed the example of Travancore soon thereafter. As far as the former District of Malabar was concerned, the introduction of modern education began somewhat later, towards the end of the first half of the century. However, when these three political units were brought together in 1956 as a result of the recommendations of the States Reorganisation Commission, there were only 46 Arts and Science Colleges in the State as a whole under one university, the University of Kerala. By 1975, the number of universities had increased to four and the number of Arts and Science Colleges to 128. The increase had taken place due to the increased social demand for higher education from the parents, the students community and the general public. However, the analysis of the nature of this growth brings out the fact that the starting of more and more new colleges was done without sufficient forethought and planning. The district-wise distribution of these colleges and the population served by each college, show that in certain districts like Quilon, Palghat, Calicut and Cannanore, the number of colleges was less in relation to their population in the average. Whereas there was a college to serve 1.46 lakhs of people in the District of Trivandrum and one for 1.16 lakhs in the District of Kottayam, on an average there was only one college for 3.72 lakhs in the District of Cannanore, one for 2.40 lakhs in the District of Palghat and one for 2.34 lakhs in the District of Calicut. The author concludes that had there been an authority which could control the establishment of colleges purely on academic considerations ignoring political pressure of popular demand, this kind of haphazard growth would not have taken place in the State.

Another important aspect of this expansion is that, more than 82 per cent of the Arts and Science Colleges in the State are under private management. Though the initiative and drive of the various private voluntary organisations in the State have contributed to the speedy development of collegiate education in the State, the financial assistance rendered on the basis of the grant-in-aid code which was in existence from 1962 to 1972 also encouraged these organisations to start educational institutions of all kinds. The financial burden of the government was further increased with the introduction of direct payment of salary to the staff under the private management with effect from 1972.

There were only about 25 thousand students for general education courses in 1957-58 but their number increased to 1.76 lakhs by 1975-76. The average annual rate of growth of enrolment was about 11.8 per cent during the period under study. Even though in two or three years, enrolment showed a decreasing trend over the preceding years, it can only be considered as a temporary phenomenon. The ever increasing pressure for admission to the colleges of general education may lead to further expansion of the size of the system and may aggravate the financial crisis by way of demanding a still higher share of the State's revenue, unless some bold steps are taken by the Government.

Public expenditure on education has been growing very rapidly in the State of Kerala. A sum of Rs. 1037 lakhs which comes to 31.5% of the total revenue was spent on general education in 1957-58. The total expenditure increased to Rs. 13,226 lakhs by 1975-76 which comes to 37.3 per cent of the total expenditure of the State. Though the percentage of annual increase was not high, in absolute terms the increase was to the tune of 1175 times. The index of growth during a period of less than twenty years was 1275. The average annual expenditure on education during the period of study was about 34 per cent of the State's total budget.

The factors responsible for bringing this tremendous increase in educational expenditure are many and varied. The political, social and economic changes that have been taking place in Kerala, as elsewhere in the country during the post-Independence period, might be responsible for this. Pressure on popular governments in the State and at the Centre compelled them to divert an enormous amount of money for meeting the expenditure on education. These fast changes reflected in the sphere of education with the demand for more number of institutions and more number of places in the existing ones. The result was the starting of more number of institutions at all levels of education, including higher education. The enrolment in institutions also rose considerably. Thus the expansion in the size and increase in number were the primary causes which demanded an enormous share of the State's revenue. As a part of the developing economy, the economic scene in Kerala was also affected by the All India phenomenon of rising prices and the consequent fall in the value of money. which acted as another factor which boosted the expenditure on education. The improvement in the salary structure of the teaching community in general, the increase in the prices of laboratory equipments, library books, stationery articles and the attempt to bring some qualitative improvement in education by way of conducting summer institutes and other inservice training programmes, revision of syllabus and textbooks etc. are the other factors which led to increase in the expenditure on education.

The expenditure on education has been increasing year after year when compared to the developmental expenditure of the State. The average annual expenditure on education was about 40.7 per cent of the total developmental expenditure of the State. Whereas the total public expenditure on general education was increasing year after year, the corresponding return on this huge investment towards the revenue of the State government was only very low during the period under study. The receipts under education were about 3.6 per cent of the total revenue receipts of the State in 1957-58 but decreased to as low as 2.3 per cent in 1975-76, whereas the total public expenditure on general education during this year was to the tune of Rs. 13,226 lakhs. It is due to increasing subsidies offered by the government in the form of free secondary education to all and a number of fee concessions at the higher stages of education.

Not only the receipt from educational institutions was very low when compared to the total receipts of the State government from various other departments but are also very low when compared to the investment of the same department. The average annual receipts formed only about 8 per cent of the average annual expenditure on education.

While the overall expenditure was increasing at a faster rate on account of expansion in size and explosion of numbers, the expenditure on university education, viewed separately, also showed a phenomenal increase. When the total expenditure showed an increase of 1,175 times more than that of the amount spent in 1957, the share of higher education increased by 2,861 times over the 1957 amount. The total expenditure was only Rs. 52.98 lakhs in 1957, but it increased to Rs. 1,568.79 lakhs by 1975-76, showing an index of growth of 1961. The expenditure on higher education was only 6 per cent of the overall expenditure on education in 1957 but it constituted 11.9 per cent in 1975-76.

The bulk of the public expenditure on higher education was spent for the development and maintenance of Arts and Science colleges in Kerala. The total direct expenditure on these colleges in 1957-58 was only Rs. 22.22 lakhs, which formed about 41.9 per cent of the overall expenditure on higher education. An amount of Rs. 1,262.93 lakhs was the direct expenditure on Arts and Science colleges in 1975-76 which constituted 80.5 per cent of the total expenditure on higher education during this year. Thus expenditure showed tremendous growth both as a percentage of the total expenditure on higher education as well as in absolute terms. The average annual growth of expenditure on these colleges was 31 per cent during the period under study, whereas the average annual expenditure was about 57.2 per cent of the overall expenditure on higher education.

It has already been pointed out that the teaching and nonteaching staff of the private colleges are paid from the public exchequer and this brought a sudden increase in the expenditure on the part of the Government with effect from 1.9.1972. Moreover, grants are paid for the improvement of laboratory, library and for the maintenance of the college buildings as well as some contingency grant to meet the miscellaneous expenditure of the institutions. Though the agreement signed with the Private College Managers' Association and with the private College Teachers' Organisation in 1972, enabled the government to exercise its control over the affairs of these colleges, it was at the expense of bringing additional financial burden on it.

The development of higher education in the State during the period under study and the spectacular increase of expenditure on higher education as a whole was the result of a "series of ad hoc decisions which were more in the nature of reactions to given situations and the ever shifting balances of pressure based on pragmatic considerations of the immediate present rather than the result of conscious policy and endeavour based on any particular approach to higher education or attempts to evolve desirable levels of expenditure consistent with the returns to the State and society in comparison with alternate channels of utilisation of scarce resources or the growth of the economy itself. In a sense, the State has been following the "social demand approach of attempting to satisfy the ever increasing appetite for higher education by year to year decisions, relating to new institutions totally ignoring the basic fact that such a policy is appropriate only in a State which does not have the problem of resource constraints". Had there been a proper administrative machinery at the State government level to plan the development of higher education after assessing the need of a locality for a college, this unplanned growth would not have taken place in the State. At present no department under the government conducts a proper survey of the growth of enrolment in the higher educational institutions, the expenditure incurred on colleges, the return from investment on higher education etc. The Directorate of Collegiate Education looks after the affairs of the Arts and Science and other professional colleges under it. The universities are concerned about the academic matters of the colleges. In practice, planning and development of higher education at the State level does not receive proper attention from the Department of Higher Education.

On an examination of the various sources of revenue and the amount contributed by each source towards the total income of the college, it was revealed that the maximum share of revenue was contributed by the State Government during the period under study. Next in importance comes the revenue received from fees from the students. U.G.C. is another important contributor. The receipts from the General Administration Departments, Government of India and other miscellaneous sources of revenue occupies a less important place when compared to other sources.

The study reveals that out of the total expenditure on higher education the average annual expenditure on universities was about 22 per cent. As far as the income of the universities was concerned, the average annual income from the State Government during the period under study was about 27 per cent and 12.6 per cent was the average annual contribution of the U.G.C. during the same period. The rest of the income comes from other sources like grants from Government of India, fees from students and receipts from the general administration.

On the whole, this is a good historical cum normative study which highlights the unplanned and haphazard manner in which higher educational institutions have been set up in the State and how they have become too much of a burden on the scarce financial resources of the State with no corresponding impact on the alround development of the State. On the contrary, it has been responsible for the creation of an ever increasing army of the educated unemployed and the consequent social evils that result from such a situation. If a reasonable share of the investment was made for the development of technical education in the State, Kerala would not have witnessed the sorry spectacle year after year of thousands of young people going out of the State in search of seats in medical and engineering colleges by paying huge sums as capitation fee.

It is regrettable that a study like this contains numerous mistakes of language and spelling. I would consider this a serious editorial lapse. For, a good publisher should see to it that such mistakes do not mar the quality of the book. The book does not also follow a uniform or standard system of giving references. Names of authors and others cited are given in a loose manner not accepted by any standard reference system. For instance, Sri, Mr., Shree, Dr., Professor, etc. are used indiscriminately at many places. Even the names of some well known personalities have been wrongly spelt. For example, C.P. Ramaswamy Iyer is given as C.P. Rama Swamy Aiyar and Adiseshiah, M.S. as Adi, Seshiah, M.S. The price of the book is prohibitive. A book of 263 pages priced at Rs. 160, is by any standard exhorbitant indeed. ☐

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Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
September 26-28, 1988	**International Conference on Welding Technology in Developing Countries**	**To provide an opportunity to scientists and technologists from developing and advanced countries to share their experiences in the area of Welding Technology.**	**University of Roorkee, Roorkee.**	**Prof. P.C. Gupta, Organising Secretary, International Conference on Welding Technology in Developing Countries, Department of Mech. & Ind. Engg., University of Roorkee, Roorkee-247667**
October 27-29, 1988	National Seminar on Statistics in Medicine, Health and Nutrition.	To discuss Data-Base and Analysis in Health and Nutrition—Present and Future.	Department of Statistics, National Institute of Nutrition, Hyderabad.	Dr. K. Visweswara Rao, Organising Secretary, National Seminar on Statistics in Medicine, Health and Nutrition, Department of Statistics, National Institute of Nutrition, Indian Council of Medical Research, Jamia Osmania, Hyderabad-500 007
October 31-Nov. 4, 1988	Short Term Course on Remote Sensing and Geo-Data Base with Socio Economic Information	To expose the concept of Data Base Approach towards handling and analysing the Remotely Sensed and Land-based Information.	Centre of Studies in Resources Engineering, IIT, Bombay.	Dr. T.V. Pavate Chief Project Engineer, Training Extension and Project Cell, RSD-VI, CSRE, IIT, Bombay-400076
December 13-17, 1988	**International Seminar on Education and Training in Water Resources in Developing countries.**	**To assess the requirements of manpower, education and training in Water Resources Sector upto the year 2025 in the developing countries.**	**Central Board of Irrigation and Power, New Delhi.**	**Mr. C.V.J. Varma, Organising Secretary, International Seminar on Education and Training, Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi-110021**
December 15-17, 1988	National Conference on Fluid Mechanics and Fluid Power	To provide a forum for exchange of information on topics in fluid mechanics and design, research and development activities in areas like power generation, aerodynamics, fluidics, biomechanics, etc.	Harcourt Butler Technological Institute, Kanpur.	Dr. N.L. Kachhara, Organising Secretary, 16th National Conference on Fluid Mechanics and Fluid Power, Mechanical Engineering Department, Harcourt Butler Technological Institute, Kanpur-208002

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1. Dave, K.S. *The social philosophy of Bhagvad Geeta.* Saurashtra. Dr. H M. Joshi.

2. Prasannakumari, S. *Pessimism in Indian philosophy : A critical study.* Calicut. Dr. V.C. Narayana Das, Head, Department of Philosophy, University of Calicut, Calicut.

3. Thorat, Surosh Kamaji. *Mansik sampratyayon sambandhi adhunik darshanik vishleshanon ka samalochanatmak adhyayan.* Nagpur. Prof. N.S. Dravid, Ex-Head, Department of Philosophy, Nagpur University, Nagpur.

Fine Arts

Music

1. Ramaswamy, Sakuntala. *Percussion instruments of South India : A study.* Delhi.

Language & Literature

English

1. Jesudasan, Jenimah Maragatham. *Cleanth Brooks as a critic.* Madurai.

2. Ramteke, Shankar Ramji. *Society and the individual in the novels of R.K. Narayan : A study in interaction.* Nagpur. Dr. K R. Kanadey, Department of English, Nagpur University, Nagpur.

3. Sankarakumar, A. *Absurd drama with reference to the plays of Harold Pinter.* Madurai.

4. Xavier, N.M. *Legacy of touchstone method in criticism.* Devi Ahilya. Dr. R.C. Ojha, Indore Christian College, Indore.

Sanskrit

1. Chaturvedi, Chandra. *Kalidas aur Ashwaghosh ke darshnik siddanton ka tulnatmak adhyayan.* Durgawati. Dr. J P. Shukla, Prof. and Head, Department of Philosopy, Rani Durgawati Vishwavidyalaya, Jabalpur.

2. Madhavan, K.T. *Vasumanavikrama of Damodara Bhatt : A critical study and edition.* Calicut. Dr. K.N. Neelakandan Eleyat, Reader, Department of Sanskrit. University of Calicut, Calicut.

3. Ramanuja Charya, V. *A study of the three commentaries of Sridhara Veera Raghava and Vijaya Dhvaja on tenth and eleventh Skandhas of Bhagavata.* Osmania.

4. Sharma, Viwanatha S. *Life and works of kavya kantha Gangapathi Muni.* Osmania.

5. Vijayan, V.K. *Kavyamimansa of Rajasekhara : A critical study.* Calicut. Dr. K.N. Neelakandan Elayat, Reader, Department of Sanskrit, University of Calicut, Calicut.

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1. Bajpai, Abha. *Nirmal Verma ka sahitya : Ek adhyayan,* HS Gour. Prof. K.K. Jain, Head, Department of Hindi. Dr. Harisingh Gour Vishwavidyalaya, Sagar.

2. Chouksey, Chhaya. *Muktibodh ka gadya sahitya : Ek adhyayan.* HS Gour. Prof. K.K. Jain, Head, Department of Hindi, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

3. Gupta, Parasmani. *Amritlal Nagar ke katha sahitya ke nari patra : Ek vishleshnatmak adhyayan.* Devi Ahilya. Dr. D. K. Chauhan, Department of Hindi, Govt. Arts and Commerce College, Indore.

4. Jasvinder Kaur. *Ashtchhap ke kavion ke kavya mein ras ka swaroop.* Panjab.

5. Mary George, K. *A comparative study of the dramas of Sri Upendranath Ashk and Srikantan Nair.* Bangalore, Dr. M. Vimala, Department of Hindi, Bangalore University, Bangalore.

6. Nandikesan Nair, V. *A critical evaluation of Hindi vyakaran of Kamaprasad Guru in the light of modern linguistic researches.* Calicut. Dr. G. Gopinathan, Prof., Department of Hindi, Calicut University, Calicut.

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1. Mohammad Sonaullah. *Urdu mein tarikhi novel nigari aghaz-o-irtiqa.* Amravati. Dr. Mohammad Sadullah, Line Pura, Jalgaon, Jamod, Distt. Buldhana.

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1. Rudra, Susil Kumar. *Bangla kavya adhunikater bibartan : 1850-1890.* Calcutta.

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1. Mohanty, Aparna. *The women characters in Oriya fiction 1920-1965.* Utkal.

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1. Tantarpale, Sudam Sakharam. *Maharashtra-teel dalit chakvak va Marathi dalit kavita.* Amravati. Dr. Sushila B. Patil, Vidarbha Mahavidyalaya, Amravati.

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1. Nalini Devi, Hadbam. *Influence of Hinduism on medieval Manipuri literature.* Manipur. Prof. I.R. Babu Singh, Department of Manipuri Language and Literature, Manipur University, Imphal.

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1. Bhatt, D.N. *Lyrical poetry of Nhanalal.* Bhavnagar. Dr. I.R. Dave

Persian

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Tamil

1. Ponnammal, T. M. *Tolkappiyarin meyppatiyalum Bharathrin Natya Sasthramum or ayuu.* Madurai.

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1. Maheshwar Rao, G. Uma. *A comparative study of the Gondi dialects with special reference to phonology and morphology.* Osmania.

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1. Bala Subbaiah, T. *Racha kanyaka parinayamu samagra pariseelanamu.* Osmania.

2. Jagannadha Naidu. Yendava. *A study of the literature related to the history and legend of the Battle of Bobbili with special reference to the Ballad of Peddada Mallesam.* Andhra.

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1. Dave, Manjula B. *City size and the levels of development in Gujarat.* Gujarat. Dr. K.M. Kulkarni.

2. Kadarmandalgi, Shridhar Gadigeppa. *Agricultural geography of rice in Karnataka.* Karnatak. Dr. M. F. Karennavar, Administrator, Karnatak University Post Graduate Campus, Lingaraj College Compound, Belgaum.

3. Mandal, Hrishikes. *Human adaptation in the Malwa Region : A study af habitat, economy and society.* Calcutta.

4. Panda, Girish Chandra. *Geomorphology and agricultural land use capability classification around Mawsynram Region of Meghalaya.* NEHU. Prof. R.K. Rai, Head, Department of Geography, North Eastern Hill University, Shillong.

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1. Biswas, Krishna. *Sculptrual art of Vanga and Samatata, 700 A.D. 1200 A.D.* Calcutta.

2. Dwivedi, Shivakant. *Life as depicted in the sculptures of ancient Bhumija temples of Malwa.* Bhopal. Dr. Rahman Ali, Reader, Department of Ancient Indian History, Culture and Archaeology, Vikram University, Ujjain.

3. Mohammed Koya, S.M. *Muslims of Malabar with special reference to their distinctive character.* Calicut. Dr. T. K. Ravindran, Vice-Chancellor, University of Calicut, Calicut.

4. Mukhopadhyay, Arunprasad. *Some aspects of crime and public order in Bengal, 1861-1912.* Calcutta.

5. Ray, Tapti. *Bundelkhand in 1857 : A study in the politics of a popular uprising.* Calcutta.

6. Saxena, Madhubala. *Chhatarpur ke mandiron mein bhitti chitra.* Bhopal. Late Dr. V.S. Wakankar.

AIDS
HOW TO PROTECT YOURSELF

AIDS is a dangerous disease and so far there is no known cure fot it. So there are lot of rumours about it. But it is not difficult to protect oneself from it, provided some facts about it are understood.

WHAT IS AIDS?

AIDS stands for Acquired Immuno-Deficiency Syndrome. It is caused by a virus that destroys the body's natural defence system.

HOW IT SPREADS?

The only likely way for someone to catch the AIDS virus is from the blood or semen from an infected person to get inside his or her body.

Most people get AIDS virus by having sex with an infected person. The rest have it by injecting themselves using needles shared with an infected person as happens commonly among the drug addicts. Only rarely transfusion of blood from an infected person have been responsible for its spread.

Not everyone who carries the virus develops AIDS. In fact most will not. But anyone who has the virus can pass it on, even if they feel and look completely well.

YOU DO NOT GET AIDS FROM

- — Normal social contact such as shaking hands, touching and hugging.
- — Swimming pools, restaurants and other public places.
- — Coughs, sneezes and spitting.
- — Clothing.
- — Toilet seats, door knobs, food, glasses and cups.

YOU DO NOT CATCH AIDS WHEN YOU :

Donate blood.

Have injections or any other treatment from your doctor, dentist or any other health care worker.

WHAT YOU SHOULD AVOID?

- — Casual sex with strangers. It is always risky. You may not know that the stranger is an infected person.
- — Anal sex. It involves the highest risk and should be avoided.
- — The more the sex partners, the more the risk.
- — Sharing injection needles with drug addicts.

REMEMBER

AIDS is not a disease to take risk with. There is no cure. AIDS control depends on how people behave.

FOR MORE INFORMATION:

You may write to Asstt. Director General (AIDS), Directorate General of Health Services, Nirman Bhavan, New Delhi—110011.

YOU CANNOT CURE AIDS BUT YOU CAN CERTAINLY AVOID IT

Issued by : CENTRAL HEALTH EDUCATION BUREAU
DGHS, KOTLA ROAD, NEW DELHI—110002.

davp 88/349 Eng.

Rayat Shikshan Sanstha's

R. B. Narayanrao Borawake College

Shrirampur-413709, Dist. Ahmednagar
MAHARASHTRA

* * *

BEST WISHES for the Special Number
in the memory of
Padmabhushan Karmaveer Dr. Bhaurao Patil

* * *

P.A. alias Appasaheb Panwal
PRINCIPAL

R. B. NARAYANRAO BORAWAKE COLLEGE

Shrirampur, Dist : Ahmednagar
Maharashtra

The Yashavantrao Chavan Institute of Science, Satara, the First Science Institute of Rayat Shikshan Sanstha, Congratulates Association of Indian Universities and appreciates their gesture of bringing out **Special Number** on Karmaveer Bhaurao Patil, the great Social Reformer and Educationist of Maharashtra

S. D. Patil
PRINCIPAL

Yashavantrao Chavan Institute of Science
SATARA

Arts & Commerce College, Pandavnagar,
Pune 411 016

Est. 1983

No. of Students : 608

Shri B.N. Shinde
PRINCIPAL

Sree Chitra Tirunal Institute for Medical Sciences & Technology

TRIVANDRUM-695 011

(AN INSTITUTE OF NATIONAL IMPORTANCE)

ADMISSION NOTICE

POST-DOCTORAL PROGRAMMES : ACADEMIC SESSION COMMENCING FEBRUARY, 1989

Qualified Indian nationals desirous of seeking admission to the various postdoctoral programmes commencing on February 1, 1989 are invited to apply in the prescribed form (non-transferable) which can be had of the Institute on request accompanied by a Bank Demand Draft of value of Rs.10/- drawn in favour of SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY, TRIVANDRUM. The request should clearly state the name of the candidates, the programme to which admission is sought and the particulars of demand draft number, branch, bank and date of issue).

Programmes Offered

3 year DM Cardiology (3 seats), DM Neurology and M.Ch. Cardiovascular Thoracic Surgery (2 seats each)

3 year and 5 year (less 1 year) M.Ch Neurosurgery with 2 seats in all.

1 year postdoctoral certificate in (a) Cardiovascular & Neurosurgical Anaesthesia; and (b) Cardiovascular & Neuro Radiology with 4 and 2 seats respectively.

Minimum Educational qualification for Entry

3 Year DM Programmes : MD in General Medicine or Paediatrics

Note : Candidates with MD in psychiatry with a minimum of six months residency posting in General Medicine and Neurology during the said course can apply for DM (Neurology).

3 Year M.Ch. Programmes : MS in General Surgery

5 Year M.Ch. (Neurosurgery) Programme : MBBS degree and one year post registration house surgeoncy/residency in general surgery from a University/PG Institute/Teaching hospital recognised by the Institute. Candidates selected under this provision will be entitled to one year exemption. Candidates without one year experience in general surgery (as mentioned above) need not apply.

Postdoctoral Certificate in Anaesthesiology/Radiology

MD/MS degree in Anaesthesiology/Diagnostic Radiology :

Note : All the aforesaid qualifications should have been obtained from an Indian University recognised by the Institute or from the National Board of examinations or from the other board recognised by the Institute.

Only those who satisfy the minimum qualifications prescribed are advised to apply for admission. Those who expect to qualify before the date of selection may forward their application by the closing date prescribed. However, they will not be called for the selection test unless evidence of having obtained the necessary qualification is produced latest by 26th December 1988. Candidates with more than two failures in the University or equivalent examinations are not eligible fora dmission.

Admission to the programmes will be based on the candidate's previous academic record and their performance in the selection tests to be held at the Institute on 6th and 7th January, 1989.

Reservation exists for SC/ST candidates as per rules of the Institute. Suitability for admission (against reserved seats) will be assessed independently of others. In case of non-availability of suitable SC/ST candidates the seats reserved will be diverted to general category,

Those selected will be paid fixed scholarship per month. The value will be Rs. 3100/- (MD/MS degree holders) and Rs. 2575/- for 5 year programme candidates during the first year.

Closing Dates

Last date for issue of forms by post : 24th October 1988

Last date for receipt of completed form at the Institute : 7th November 1988

(alongwith non-refundable registration fee of Rs. 30/-)

The applications received beyond the last dates are liable to be rejected.

The details of qualifications, selection procedure, reservation, sponsorship, scholarship and general conditions will be as given in the Prospectus for the year 1989.

DIRECTOR

Post Graduate Institute of Medical Education & Research

CHANDIGARH

ADMISSION NOTICE NO. 4/88 (Acad.)

Closing Date for the receipt of Applications is 10th Oct., 1988.

Applications on prescribed form are invited for the following postgraduate/post-doctoral courses etc. for the academic session starting from First January, 1989 :—

1. First year Junior Residents (52) for M.D./M.S. courses in the following subjects :

(a) Clinical Group : 39

Anaesthesia (5), Dermatology (3), ENT (3), Medicine (6), Obst. & Oynae. (4) Paediatrics (3), Psychiatry (1). Ophthalmology (3), Orthopaedic Surgery (1), Radio-Diagnosis (2), and Surgery (8).

(b) Para-clinical Group : 13

Microbiology (3), Pathology (6) and Pharmacology (4)

(i) those completing their internship after 31-12-88 are not eligible.

(ii) Candidates can apply for a maximum of two subjects in clinical group. They can apply for all subjects in para cilinical group. Only one application, however, needs to be submitted and the choice of subjects may be mentioned in the relevant column of the application. Application fee is Rs. 30/- per subject.

(iii) 22½% of seats in each of the above mentioned groups are reserved for candidates belonging to Scheduled Castes/Tribes. In addition, 5% seats are reserved for candidates who have served or are serving or have carried on private practice in rural areas for a minimum of two years.

(iv) A limited number of sponsored/deputed candidates may also be accepted for the courses mentioned above as also for M.D. (Radiotherapy) course.

II. enior Residents : 17 (for D.M./M. Ch. Courses) in the following subjects :

D.M.		M.Ch.	
Cardiology	—3	Neuro—Surgery	—1
Clinical Pharmacoloy	—2	Plastic Surgery	—3
Endocrinology	—1	Cardiovascular & Thoracic Surgery	—2
Gastroenterology	—2	Urology	—2
Nephrology	—1		

(i) The post in Nephrology and one post in Plastic Surgery are reserved for candidates belonging to Scheduled Castes/Tribes.

(ii) A limited number (1—2) of sponsored/deputed candidates may also be accepted in all the subjects (except Neuro—Survey & Urology) mentioned above as also for DM course in Neurology.

(iii) Upper age limit on 1-1-89—Not more than 35 years and 40 years for candidates belonging to Scheduled Castes/Tribes and for ex-servicemen and commissioned officers including E.C.O./S.S.C.Os., who have been released on satisfactory completion of assignment (including those whose assignment is due to be completed within 6 months). No upper age limit restriction for deputed/sponsored candidates.

(iv) Candidates due to appear in MD/MS examinations during November/December, 1988 can also apply. They will be admitted to the entrance test only if they supply the result of their examination from the University concerned before the entrance test.

III. Ph. D. Programme

Vacancies exist in the following departments :

Biochemisty, Biophysics, Cardiology, Endocrinology, Experimental Medicine, ENT, Gastroenterology. Hepatology, Immunopathology, Internal Medicine, Medical Microbiology, Neurology, Paediatrics, Parasitology, Pharmacology, Psychiatry including clinical psychology, Radio-therapy and Virology.

IV. Second year Junior Resident-1 for M.D.S. Part-1 course in the specially of Pedodontia and Preventive Dentistry.

V. Diploma in Blood Transfusion and immunohaematology.

VI. M.Sc. Medical Technology (Pathology) with Cytology or Haematology or Immunopathology or Morbid Anatomy as a special subject.

VII. M.Sc. Medical Technology (Microbiology) with Bacteriology or Parasitology or Virology as a special subject.

VIII. M.Sc. Medical Technology (Pharmacology and Physiology).

IX. M.Sc. Medical Technology (Radiology) with Radio-diagnosis or Radio-therapy as a special subject.

X. Certificate course in Critical Care Medicine.

XI. M.Sc. (Pharmacology)

XII. First Year Junior Residents : 3 for the Department of Dentistry for a period of 6 months. One post reserved for Sch. Castes/Tribes. Those who have already completed or will complete First Year Juior Residency or House Job for one year by 31-1-1989 are not eligible.

General Information

1. Candidates other than those belonging to Sch. Castes/Tribes having more than one failure during MBBS (for category 1) and BDS (for categories IV and XII) course are not eligible. Sch. Castes/Tribes candidates with upto two failures in their MBBS/BDS career will be eligible.

2. Those applying for the reserved seats must append, with their applications, a certificate from the District Magistrate concerned in support of their claim. No other certificate will be entertained.

3. For courses at categories V to IX above only sponsored/deputed candidates will be considered for admission.

4. The courses at categories IV and V are under the Panjab University.

5. The number of vacancies indicated in categories I, II, IV and XII is provisional and is subject to change without prior notice.

6. The application must be accompanied with non-refundable fee of Rs. 30/- in the form of postal order drawn in favour of the Director for each of the courses mentioned above. A candidate applying for more than one subject/course is required to submit separate application, complete in all respects for each subject/course, except for category No. 1.

7. Application form and detailed information are available from the office of the undersigned either personally on payment of Rs. 5/- at the counter from 11 AM to 12 Noon and 3 PM to 4 PM on all working days except saturdays or by post for which the request must be accompanied with a self-addressed envelope (size 23×10 cms.) bearing postage stamps of Rs. 3.40 and crossed postal order for Rs. 5/- drawn in favour of the Director.

152/CH **REGISTRAR**

Indian Institute of Education's Centre for Educational Studies

128/2, J.P. Naik Path, Off Karve Road, Kothrud
PUNE-411 029

Applications are invited from students/teachers for admission to Ph.D. Course in Education (Inter-disciplinary) of the University of Poona for which one doctoral fellowship and for one salary protected fellowship of the ICSSR are available.

Persons holding Master's degree of a statutory university with minimum 55% marks either in Education or in any of the Social Sciences, with M. Phil. degree either in Education or in any one of the Social Sciences are eligible.

The candidate for ICSSR doctoral fellowship should be below thirty years (relaxable by 5 years for SC/ST candidates). The value of the fellowship is Rs. 1000 p.m. during first two years and Rs. 1200 p.m. during subsequent two years of the course.

Only confirmed employee possessing above-mentioned qualifications and below 35 years of age out of the following categories will be selected for salary protected fellowship : (i) Teachers of Senior Colleges of Arts, Science or Colleges of Education (ii) Members of Professional staff in Research Institute and (iii) Eligible people with Govt. persons desiring to apply for admission should do so through their employers. The value o f fellowship will be equal to his/her pay and allowances. The tenure of salary protected fellowship is four years. Prescribed application forms can be had from the Registrar. Last date of submission of filled-in applications form is **30th September, 1988.**

DIRECTOR

CLASSIFIED ADVERTISEMENTS

INDIRA KALA SANGIT VISHWAVIDYALAYA

KHAIRAGARH (M.P.)

No. A.S./Dev./88

Dated : September 5, 1988

APPLICATIONS are invited for the following posts in the University Teaching Departments, viz., A. **LIBRARIAN**, B. **READERS** : Three, one each for Kathak Dance, English and Violin, C. **MATRON** : for Girls Hostel. Scales of Pay: LIBRARIAN Rs. 1500-60-1800-100-2000-125/2-2500/- READERS: 1200-50-1300-60-1900/- (pre-revised scale), MATRON : 500/- (fixed pay). Qualifications for Librarian, Readers are as prescribed by the University Grants Commission. Details of qualifications may be obtained from Registrar. Posts are permanent and carry CPF benefits and DA/ADA at University rates from time to time. Appointee will be on probation according to University Rules. Retirement age 60 years. Reservation for posts for SC/ST will be according to Government rules. If candidates are not available or not found suitable, posts will be filled up from general categories. Prescribed application forms (in six copies) and other details may be obtained from the Registrar sending self-addressed stamped envelope of Rs. 3/- of 25 × 12 cms—Application fee Rs. 20/- for Librarian, Readers and Rs. 5/- for Matron in the form of IPO. Last date for receipt of applications in six copies is **10th October, 1988.** The University reserves the right to keep vacant any of the advertised posts without assigning any reason. Candidates called for interview will be required to come at their own cost—Candidates who are in service must apply through proper chamel.

Note : Those who have already applied for the post of Reader in Violin vide advertisement No. RD/88/5172, dated 24th May, 1988, need not apply again.

M.K. Gangajaliwale
REGISTRAR

THE UNIVERSITY OF BURDWAN

RAJBATI, BURDWAN
WEST BENGAL

Advertisement No. 6/88-89

Dated : September 6, 1988

Applications in the prescribed form are invited for the following posts in the revised scales of pay viz. Professor-Rs. 4500-150-5700-200-7300/- ; Reader—Rs. 3700-125-4950-150-5700/- and Lecturer Rs. 2200-75-2800-100-4000/- Plus dearness and other admissible allowances and pensionary benefits according to the University Rules.

A.	Professorship in Sociology	... One post
B.	Professorship in Political Science	... One post
C.	Readership in Sanskrit	... One post
D.	Readership in History	.. One post
E.	Readership in English	... One post
F.	Readership in Bengali	... One post
G.	Lecturership in Sociology	... Two posts

Minimum Qualifications

For Professorship

An eminent scholar with published work of high quality, actively engaged in research. About ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

Or

An outstanding scholar with established reputation who has made significant contribution to knowledge.

For Readership

Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

At least five year's experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position.

This condition may be relaxed in the case of candidates with outstanding record of Teaching/Research.

For Lecturership

(a) A Doctor's Degree or research work of an equally high standard; and

(b) Good academic record with at least Second Class (C in the seven point scale) Master's Degree in a relevant subject from an Indian University or an equivalent degree from a foreign University.

Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable, a person possessing a good academic record (weighatage being given to M.Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years on the condition that he will have to obtain a Doctor's Degree or give evidence of research of high standard within eight years of his appointment, failing which he will not be able to earn future increments until he fufils these requirements.

Desirable Qualifications : Specialisation or Proficiency

For A : Any branch of the subject.

For B : Any branch of the subject.

For C : Any branch of the subject.

For D : Any branch of the subject.

For E : Comparative Literature with knowledge of Ancient Classics or Modern Criticism or 16th and 17th Century Literature.

For F : Modern Bengali Literature.

For G : Any branch of the subject.

Those who do not fulfil the minimum qualifications need not apply.

The choice of the Committee may not necessarily be confined to those who apply formally.

For application form and other particulars please apply to the Registrar, University of Burdwan, Rajbati, Burdwan with a self-addressed stamped (Re. 1/-) envelope (9" x 4").

Last date for submission of application with requisite fee of Rs. 5/- is **September 30, 1988.**

REGISTRAR

TATA INSTITUTE OF SOCIAL SCIENCES

DEONAR, BOMBAY 400 088

Applications are invited for the following posts. The prescribed application form, along with the details of qualifications, experience, etc., prescribed for each post, should be obtained from the above address, either in person, or by post, by sending an application for the same, along with a stamped (Rs. 2.00) self-addressed envelope superscribed "Request for Application Form for Teaching posts".

I. Lecturers (Two posts) in the pay scale of Rs. 2200-75-2800-100-4000 + D.A. and other allowances. **One post in the Department of Criminology and Correctional Administration,** having M.A. degree in Social Work with either specialisation in Criminology and Correctional Administration or M.A. degree in Social Work in a generic programme with field work or work experience in this field. Persons additionally having a law degree in Criminal law will be preferred. **The post is reserved for SC candidates.** In case suitable SC candidates are not available, the post will be treated as de-reserved and applicants from general categories will be considered for permanent appointment. **One post in the Research Unit for Family Studies,** having M.A. degree in **Social Work** (with specialisation/field work experience in the area of the family)/**Sociology** (with special papers or Research Work in the areas of the family)/**Home Science** (with specialisation in family studies). **The post is reserved for SC candidates.** In case suitable SC candidates are not available, applicants from other categories may be considered for appointment on a temporary basis for a period of six months, extendable to another six months beyond which, if no SC candidate applies, the person in the general category may be placed on probation provided that the Selection Committee finds him/her suitable for appointment against the de-reserved post.

II. Assistant Managing Editor (One post) in the pay scale of Rs. 2200-75-2800-100-4000 + D.A. and other allowances having M.A. degree in English language and literature **or** M.A. degree in Journalism and B.A. degree in English language and literature **or** M.A. degree in Social Sciences and qualifications in Journalism/publications or experience in a publishing company. Those with M. Phil./Ph.D preferred.

The Last Date for receipt of filled in application is **3-10-1988.**

N. Krishnamoorthy
REGISTRAR

REGIONAL RESEARCH LABORATORY

JAMMU

(Council of Scientific and Industrial Research)

Advertisement No. : 3/88

Applications are invited on the prescribed form of the following posts in Regional Research Laboratory, Jammu/Srinagar :

1. Scientists 'C' : Four Posts
Rs. 3000-100-3500-125-4500

(i) **Qualification & experience :** Ist class M.Sc. Biochemistry/Microbiology/any of the Biosciences with 6 years research experience/Ph.D. in same subjects with 2 years research experience in recombinant DNA technology. **Job requirement :** Genetic Engineering Programme of this Institute at present is mainly in the areas of microbial gene manipulation for hyperproduction of industrially important drugs and chemicals. The incumbent will have to work in this programme for improvement of the strains of Industrial importance. Experience is relaxable in case of otherwise well qualified candidates.

(ii) **Qualification & experience :** Ist class B.E. in Chemical Engineering/Biochemical Engineering with 6 years research experience in the areas of fermentation technology or M.E. with 4 years experience/Ph.D. in Biochemical Engineering / Chemical Engineering with 2 years research experience in fermentation process. **Desirable :** The candidate should have experience of handling computerised fermentation equipment for data aquisition, analysis and control. Experience in software development for fermentation control would be preferred. **Job requirement :** Candidate is required to be involved in the process developments in fermentation and scale up studies and development of software. Experience relaxable in case of otherwise well qualified candidate.

(iii) **Qualification & experience :** Ist class B.E./B.Tech in Computer Science with 6 years experience or M.E. Computer Science with 4 years experience or Ph.D. with 2 years research experience. **Job requirement :** To develop software for various scientific programmes for the laboratory.

(iv) **Qualification & experience :** Ist class B.E./B.Tech in Electronics with 6 years research experience or M.E. Electronics with 4 years research experience/Ph.D. in Electronics with 2 years research experience. **Job requirement :** To take care of modern electronics instruments like Electron Microscope, FT-NMR, GCMS, Computers, Microprocessors equipment etc. Selected candidate will also have to collaborate in development of various technologies where Microprocessors can be used. Experience relaxable in case of otherwise well qualified candidate.

2. **Scientist 'B' : One Post**
Rs. 2200-75-2800-EB-100-4000
(Reserved for SC)

Qualification & experience : Ist class M.Sc. in Organic Chemistry with 4 years research experience in chemistry of natural products/Ph.D. in Chemistry with 2 years research experience. The candidate should be proficient in isolation, structural elucidation of naturally occurring alkaloids. He should be conversant with latest instrumental and physical methods. **Job requirement:** To engage in isolation, structural elucidation of Biologically active compounds. **The post is reserved for Scheduled Caste candidate. General candidates can also apply, in case no Scheduled Caste candidate is found suitable the post would be filled by General candidate.**

3. **Technical Assistants Gr. VIII —7 Posts**
Rs. 1400-40-1800-EB-50-2300
(Reserved for SC—5)
(Reserved for ST—2)

Qualification & experience: B.Sc. with Chemistry and Biology with 4 years experience OR Three years Diploma in Electronics / Computers with 2 years relevant experience.

4. **Nurse Female : 1 Post**
Rs. 1400-40-1800-EB-50-2300

Qualification & experience : 3 years General Nursing Diploma plus one year Midwifery Diploma from reputed Institutes with 2 years experience OR B.Sc. Nursing. **Job requirement :** To assist the Medical Officer in RRL Dispensary in day to day work. The selected candidate will be placed in Group II of the CSIR under New Recruitment and Assessment Scheme.

5. Technician Gr. II : Panel
Rs. 950-20-1150-EB-25-1400
(Reserved for SC —1)
(Reserved for Deaf—1)

Qualification & experience : Matriculation/ITI Certificate in Library Science with 2 years laboratory experience. The candidates are required to work as assistants in various sections like **Entomology, Computers, Instrumentation, Arts, Library, Chemistry, Botany, Biology** and **Food** at Jammu or at Branch Laboratory, Srinagar.

All the above posts are temporary and carry usual allowances as admissible under the Central Government rules. Higher initial start may be given to deserving candidates.

Selected candidates can be posted anywhere in Jammu or Srinagar.

Since it is not possible to call all the candidates for interview, the applications will be shortlisted for the purpose and the decision of a duly constituted Screening Committee of the Institute will be final in this regard.

Application form can be had (free of cost) from the Administrative Officer, Regional Research Laboratory, Canal Road, Jammu Tawi upto 3-10-1988. Separate application should be submitted for each post. Number of advertisement, name of post applied for and full address in BLOCK LETTERS must be indicated at the top of the request which should be sent together with a self-addressed envelope of 22 cm × 10 cm for obtaining application form.

No Application fee is prescribed for Scheduled Caste/Tribe Candidates and also for Technician post mentioned at Sr. No. 5.

Completed application on the prescribed form together with non-refundable application fee of Rs. 8/- from General candidates (for the posts of Scientists 'C', 'B' and Nurse Female) in the form of Crossed Indian Postal Orders drawn in favour of the **Administrative Officer, Regional Research Laboratory, Canal Road, Jammu Tawi** alongwith attested copies of the certificates/testimonials relating to educational qualifications, date of birth, experience and original community certificate in respect of Scheduled Caste/Tribe and Medical certificate in respect of Deaf from the appropriate authorities should reach him on or before **17-10-1988. The applications received after this date and/or Incomplete are liable to be rejected and no interim enquiries will be entertained.**

Applications from employees working in Government departments, Public Sector Undertakings and Govt. funded research agencies will be considered only if forwarded through proper channel and with a clear certificate that the applicant will be relieved within one month on receipt of appointment order.

CANVASSING IN ANY FORM AND/OR BRINGING ANY INFLUENCE POLITICAL OR OTHERWISE WILL BE TREATED AS A DISQUALIFICATION FOR THE POST.

BHAVNAGAR UNIVERSITY

BHAVNAGAR

Notification No. 6/88

The following positions in this University are likely to be created on receipt of UGC sanction.

1. **Professor :** Physics, Marin Science, Commerce and Hindi.

2. **Reader :** Physics, Marine Science, Commerce, Gujarati, History, Sociology, Psychology and Statistics.

3. **Lecturer :** Physics, Marine Science, Hindi, Gujarati, History, Sociology, Statistics and English.

Qualifications required as prescribed by UGC. Applications in seven copies accompanied by crossed postal order of Rs. 25/- drawn in favour of Registrar, Bhavnagar University, Bhavnagar-364002 are invited in the following format so as to reach before **30th September, 1988.**

APPLICATION FORMAT

1. Full name of the applicant; 2. Residential address; 3. Address for correspondence; 4. Date of birth; 5. Whether a member of Scheduled Caste/Tribe; 6. Educational qualifications; 7. Experience about service; 8. Information about Post-graduate teaching.

R.S. Mehta
REGISTRAR

Rayat Shikshan Sanstha's

Dhananjayrao Gadgil College of Commerce

SATARA-415001

(Department of Business Education & Research)

(Affiliated to Shivaji University, Kolhapur)

Dhananjayrao Gadgil College of Commerce, Satara, has been running the Two Year Course in Master of Business Administration (M.B.A.) since 1981-82 and one year Diploma Course in Business Management (D.B.M.) since 1973-74.

ELIGIBILITY FOR ADMISSION

(1) **M.B.A.** A bachelor's Degree with minimum Second Class in the faculty of Arts, Commerce, Science, Engineering, Social Sciences or Agriculture of a statutory University.

(2) **D.B.M.** Graduate of any statutory University with one year experience at the Junior Executive Level or Diploma (3 years duration) in Engineering awarded and recognised by the Maharashtra Technical Board can only apply.

PROCEDURE FOR M.B.A. ADMISSION

The admission for M.B.A, Course will be confirmed following the declaration of results of Entrance Examination and personal interviews conducted by the Shivaji University, Kolhapur. The dates for Entrance Examination, group-discussion and Personal Interviews are usually declared some time in June/July every year.

PROCEDURE FOR D.B.M. ADMISSION

The admission for D.B.M. Course will be confirmed after the selection & personal interviews conducted by the Shivaji University, Kolhapur. The date of Personal Interviews is usually declared in June/July every year.

PROSPECTUS

(1) **M.B.A.** Application form and Prospectus are available from the college on payment of Rs. 30/- in cash or by sending Rs. 40/- by D.D./I.P.O./M.O/in favour of Principal, Dhananjayrao Gadgil College of Commerce, Satara.

(2) **D.B.M.** Application form and Prospectus are available form the college on payment of Rs. 25/- in cash or by sending Rs. 35/- by D.D./I.P.O./M.O./in favour of Principal, Dhananjayrao Gadgil College of Commerce, Satara.

M.M. Swami
For PRINCIPAL

UNIVERSITY NEWS, MONDAY, SEPTEMBER 19, 1988 Regd. No. R.N. 7180/63 Delhi Postal Regd. D(C) 1086

KARMAVEER BHAURAO PATIL
Memorial at Satara

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University News

MONDAY, SEPTEMBER 26, 1988 Rs. 2.50

Shri H.Y. Sharada Prasad (second from right), Secretary, Indira Gandhi Memorial Trust, delivered the Convocation Address at the Bharathiar University, Coimbatore. Others from L to R are Dr. K.M. Marimuthu, Vice-Chancellor, Dr. P.C. Alexander, Governor of Tamil Nadu and Thiru A. Padmanabhan, Adviser to the Governor.

PANJAB UNIVERSITY, CHANDIGARH

(Advertisement No. 9/88)

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For Post at Sr. No. (1)

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OR

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Desirable : At least 5 years' administrative experience at the level of Superintendent/P.A. or above in a University or an educational institution.

OR

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OR

Comparable qualifications in Research Establishment and other institutions of higher education.

For Post at Sr. No. (2)

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Superintendents/PAs or persons holding equivalant posts in the administrative (ministerial) staff of the Panjab University with the following qualifications/experience :

(i) 10 years' service in the existing post (irrespective of the qualifications prescribed).

OR

(ii) 3 years' service in the existing post with B.A., being the minimum qualification, provided the total service as Assistant/Stenographer or equivalent or higher posts is not less than 15 years.

OR

(iii) "5 years' service in the existing post in the case of matriculates provided the total service as Assistant/Stenographer or equivalent and higher post is not less than 17 years."

Desirable : At least 2 years' experience of educational administration and sufficient knowledge of organisation and working of a University/affiliated colleges.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date are liable to be rejected unless the Vice-Chancellor condones the delay or discrepancy by a Special Order. Attested copies of certificates in support of the qualifications and experience be attached to the applications. Serving employees may, however, send their applications on the prescribed proforma direct to the University. They may route another copy through their department. They will be allowed to present themselves for interview only on the production of 'No Objection Certificate' from their employers. Canvassing in any form will disqualify the candidate. Higher start to deserving candidates is admissible.

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It is not obligatory on the part of the University to call for interview every candidate who possesses the essential qualifications.

The number of vacancies may change. The University may also prepare panel of suitable candidates for appointment against vacancies occurring within a specified period.

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

THE ISSUE AT MITHILA

Amrik Singh*

During the past few weeks, several Vice-Chancellors have had to face rough weather. Of the recent incidents at Saugar and four Bihar universities, it is the one at Mithila which calls for special notice. This is not to suggest that what happened elsewhere can be condoned. But what happened at Mithila is the most outrageous and raises certain vital questions with regard to the status and role of Vice-Chancellors and the management of universities.

According to press reports, Prof. Shakeelur Rehman, VC of Mithila University, has been removed from Vice-Chancellorship on the ground that he did not attend a particular meeting summoned by the Chancellor. If this is correct, it is something unprecedented. Not attending a meeting cannot be a cause for dismissal. Clearly it must have been something else that was responsible for his being removed from the job.

Perhaps, as press reports go, the real case was acute disagreement of a personal nature between the Minister for Education in the state, Dr. Nagendra Jha, and the VC. Dr. Jha has been on the staff of that university for almost a decade though all this time he has been on leave. There is some controversy with regard to his being made a Professor. Since he has worked only for a few weeks at the said University, the VC is reported to have taken the view that he was not entitled to Professorship. However, to go by press reports in their entirety, would not be correct. Nor does one know the point of view of Dr. Jha himself. In the absence of both versions, it would not be in order to draw any definite inference.

But one thing appears to be definite. There was strain between the two. If it is the Minister of Education in the state who is hostile to the VC, clearly the VC cannot function. The VC is appointed by the State government and even though the Chief Minister may be the one to take the final decision, the opinion of the Minister concerned cannot be altogether disregarded. What is more, Bihar traditions in this regard are worse than that of any other state.

To say something in defence of the VC there is not to support him only as an individual. As reported, he chose to confront corruption, nepotism, casteism and the various other ills to which our universities are subject. As many as 38 Readers are said to have been demoted because of certain irregularities in regard to their appointments. Not only that, 200 non-teaching employees who were found guilty of negligence had their services terminated. Clearly the VC had embarked upon cleaning the Augean stables, as they say.

In the process, he earned the wrath of many of them with a political clout. More than that, he took on confrontation with the Minister for Education himself. No wonder, with all these people thirsty for his blood he could not survive. It appears that the Chancellor gave in to the pressure mounted upon him from a number of quarters and sacked him.

**Former Secretary, Association of Indian Universities, 2/26 Sarva Priya Vihar, New Delhi-110016*

The fact of the matter is that sacking a VC is so easy as not to surprise any one. In several states, notably in Bihar, they have been repeatedly sacked as if they were daily wage workers, that is to say, without much thought of any adverse consequences.

About a decade ago, Shakeelur Rehman was VC of another university in Bihar. But he had to go out of office alongwith several others. His re-induction was, in a sense, a tribute to his capability and uprightness. But then who wants these qualities these days ? This is the sad situation at which we seem to have arrived.

One particular fact, however, calls for notice. It has been reported that a short while before he was removed from office (and he could see it coming), he addressed a letter to the Prime Minister. Nothing came out of it. Nor does one know what happened to it. Perhaps it was filed or put away or something like that. These details are not important.

What is important is to call attention to the fact that the Prime Minister is not as powerless as is made out. As things stand at present, education is a concurrent subject. In any case, as far as higher and professional education are concerned, the Centre has had, right from 1950, powers of a far-reaching kind. It is another matter that those have not been exercised. The powers are there and they can be exercised provided, as they say, there is a political will to do so.

In this connection, what needs to be recalled is what happened after the 42nd Amendment was adopted in 1976. When Janata came to power, quite some provisions of that particular amendment were repealed. Not so the provision relating to education; education continues to be a concurrent subject.

What happened was somewhat like this. In the Rajya Sabha, the Janata government did not have a two-third majority. In regard to other provisions which were repealed, some kind of an understanding was worked out between the Janata and the Congress Party. This understanding however did not extend to education. In plain words, what the Congress party did at that time was to reaffirm its commitment to education as a concurrent subject. It is another matter that there has been no follow up legislation since then, which is only another way of saying that whether education is concurrent or otherwise, the 1976 Amendment has not been given any legislative expression.

But there is more to it. In the 1986 New Policy on Education, it is stated as follows :

> A MEANINGFUL PARTNERSHIP
>
> 3.13 The Constitutional Amendment of 1976 which includes Education in the Concurrent List, was a far-reaching step whose implications substantive, financial and administrative require a new sharing and responsibility between the Union Government and the States in respect of this vital area of national life...

In plain words, in terms of the policy which is now in force ; the Centre undertook to give content and body to concurrency in regard to education. Evidently, if nothing has been done since, it is an unmistakable instance of back-tracking from the commitment made.

Let us be fair to the government. Constitutional provisions are one thing and their enforcement is another. All these decades, the Centre has never intervened in such matters. To do so today would not be easy either. Secondly, in quite a few states, opposition governments are in power and they would not accept any dictation by the Centre. It is essentially a question of political equations rather than of statutory powers.

This much may be conceded. But can the Centre adopt the attitude that when such outrageous things are done, it has no concern with the matter at all or that it has no role to play ? In this behalf it may be in order to recall what Maulana Azad had said at the time the Constitution was being drawn up. He was of the view that while "Central control" was not feasible, "Central guidance" was both desirable and feasible.

It was in pursuance of this approach that Entry 66 of the Seventh Schedule was adopted. Determination and coordination of standards is a central function and it is in terms of this Entry that the UGC was established in 1956 and now the AICTE. If anyone chooses to suggest that the appointment and removal of VCs has nothing to do with the performance of universities it is an argument which one cannot buy. Of all the decisions that have to be taken in respect of a university, one of the more important ones is to appoint a VC. With things degenerating, as they are, it is time that this matter is given another look.

How can that be done is the next question. An appropriate way of doing so would be that the Ministry of Human Resource Development prepares

(*Continued on page 9*)

UNIVERSITIES AND LAW COURTS

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T. K. Tope*

Taking Over Minority Managed Schools

Article 30 Bihar Non-Government Secondary School (Taking over Management and Control) Act 1981 which authorises the Government to take over management even of minority schools is not violative of Article 30. The court laid down, 'Minority institutions, may be categorised in three classes, (1) educational institutions which neither seek aid or recognition from the State, (2) institutions that seek aid from the State, and (3) educational institutions which seek recognition but not aid. Minority institutions which fall in the first category, and free to administer their institutions in the manner they like; the State has no power under the Constitution to place any restriction on their right of administration. This does not mean that an unaided minority institution is immune from operation of the general laws of the land. A minority institution cannot claim immunity from contract law, tax measures, economic measures, social welfare legislation, labour and industrial laws and similar other measures which are intended to meet the need of the society. But institutions falling within the second and third categories are subject to regulatory provisions which the State may impose. (*All Bihar Christian Schools Association Vs. State of Bihar*, (1988) 1 *SCC*, p. 206).

Note : This judgment lays down that the State may take over the management of even minority educational institutions which seek either aid or recognition from the State. Of course there must be a valid legislation for that purpose. It appears that the State cannot take over management of a minority educational institution which seeks neither aid nor recognition. However such institutions continue to be subject to the general laws of the land. It means that even in case of such institutions, Industrial Disputes Act would be applicable.

Medical Education

Since the judgment of the Supreme Court in Pradip Jain case and later in Dr. Ashok Kumar case, the problem of admission to medical courses, both undergraduate and postgraduate has come up before the Courts on many occasions. Some of the cases were with respect to claims of a particular candidate to admission to a particular course, when the University changed existing rules and introduced new rules.

Mridula Avasthi's case (*AIR* 1988 *SC* 1485(1988)2 *SCC* 572) considered the new rules made by the University regarding admission to postgraduate courses in Medicine and other relevant matter. The Supreme Court directed the University to create one seat in every speciality over and above the seats fixed by the University and make consequential arrangements.

Admission to M.B.B.S., B.D.S.

A clause in the Bulletin of Information issued by Faculty of Medical Science, University of Delhi laid down that a candidate must indicate his first preference to one of the courses and further restricted his candidature for first preference. The Delhi High Court (Division Bench) struck down the clause as discriminatory and explained that primary consideration in selection of candidates for admission to medical colleges must be merit. (*R.K. Gupta Vs. Dean, University of Delhi*).

Arti Gupta Vs. State of Punjab, AIR 1988 SC 481

The Government of Punjab by a notification reduced the minimum marks required for a S.C., S.T. for admission to medical college from 35% to 25% for the session 1987 only. This notification was issued because out of 100 seats reserved for S.C., S.T. categories under the original rule, only 32 candidates were qualified for admission. The reduction to 25% enabled the State to fill in all the remaining 68 seats from S.C., S.T. candidates. This notification reducing the requirement to 25% was challenged on various grounds. One of the grounds, was that the notification was contrary to the regulation made under Section 33(1) of the Indian Medical Council Act. The Supreme Court held that the Regulation is in the nature of recommendation only and hence not binding. The Court also referred to an earlier case (*State of M.P. Vs. Kumari Nivedita Jain, AIR 1981 SC 2045*). Having thus upheld the reduction of qualifying marks for S.C., S.T. candidates to 25% the Supreme Court observed as follows :

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* *Former Member, Law Commission and Vice-Chancellor, University of Bombay (1971-77).*

"There has been perceptible fall in national standards and general efficiency of the professional men. While it is not necessary for us to say, anything against reservation, we approve of the concern shown by the Indian Medical Council that high standard of efficiency should be maintained and that can only be possible if the State and the Council cooperate to maintain a high standard."

What is true of medical profession is true of the legal profession and also of the Engineering profession.

It is suggested that the concerned Councils review the provisions of the Act, under which they are created and suggest to the Government of India, necessary modifications to enable these Councils to have effective and binding control over professional educational institutions in their respective spheres.

As no specific rules were prescribed for admission to postgraduate courses in medicine by the college, the Bombay High Court upheld the allotment of the seat in Paediatrics to a O.B.C. candidate on the ground to have fair and just distribution of seats amongst reserved categories *(Anil Vs. Dean, I.G. Medical College & Hospital, Nagpur, AIR 1988 Bom. p. 78)*.

While giving admission to postgraduate medical courses, consideration of weightage for rural service or having reached the target under family planning programme are irrelevant considerations. These considerations are arbitrary and unreasonable *(Salil Kumar Vs. State of Orissa, I.R. 1988, Orissa (F. 13) 146)*.

Orissa High Court in a Division Bench decision laid down that the rule prescribing Oriya as a compulsory subject to qualify for selection in medical college was unconstitutional. The rule violated Article 14 and Article 29(2). It laid down that the subject 'Oriya' has no reasonable connection with the study of medical science. It is submitted that this is a correct judgment. Hence no State can prescribe its regional language as a compulsory subject for admission to Medical College. *(Amisha Nagpaul Vs. State, A.I.R. 1988 (Ori) 190)*.

Membership of Medical Council of India

Persons who are members of the Medical Council of India as elected members from the Senate of the Universities cease to be members of the Medical Council, the moment they cease to be members of the concerned Senate. *(S.N. Deshmukh Vs. The Medical Council of India, AIR 1988, Bom. 284)*.

Law Admissions

The rules made by the Bar Council of India for admission to Law course are mandatory. Hence admission of students securing less than 40% of marks at B. Com. examination as a special case on the recommendation of Education Minister is illegal. Hence cancellation of admission of such students by the university is valid *(Rajesh Vs. Awadhesh Pratap Singh Vishwavidyalaya, AIR 1988 M.P. 139)*.

Ecology and Directives of the Supreme Court of India

In *M.C. Mehta (II) Vs. Union of India (1988) 1 SCC p. 471*, the Supreme Court was considering the case of pollution of water of river Ganga and issued certain directives to all Mahanagar Palikas and ordinary palikas to adopt measures in order to ensure that the water would not be polluted. In the course of the judgement, the Supreme Court referred to one of the Fundamental Duties laid down in Art 51A. The duty is as follows :

"It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers, and wild life and to have compassion for living beings."

"Having regard to the grave consequences of the pollution of water and air and the need of protecting and improving the natural environment which is considered to be one of the fundamental duties, we are of the view that it is the duty of the Central Government to direct all educational institutions throughout India to teach at least for one hour in a week lessons relating to the protection and improvement of the natural environment including forests, lakes, rivers, and wildlife in the first ten classes."

It is submitted that what the Court has said about schools is equally applicable to institutions of higher education too.

Disciplinary Matters

Opportunity of Being Heard Must be Given

I. The Syndicate of the Madurai Kamaraj University did not continue the services of Dr. K. Rajayyan, Professor of Modern History on the ground that his conduct as a supervisor of a Ph.D. Thesis was reprehensible and brought disrrepute to the University. The Syndicate relied upon one of the statutes framed by the University which enabled a teacher to retire on completion of the age 55. The Supreme Court set aside the order of the Syndicate as it cast a stigma on the character of the Professor and no opportunity of being heard regarding the allegations against him in an appropriate proceeding was given to him. (*Madurai Kamaraj University Vs. K. Rajayyan, AIR 1988 SC 385*).

II. Some students were expelled from the Government Polytechnic, Ambala on the ground of indiscipline and misconduct. However, no show cause notice was served on them and there was no hearing before the passing of the order. The Punjab High Court held that the expulsion was contrary to the rules of natural justice and allowed the petition. Hence, the Court awarded the petitioner cost (Rs. 200) of the petition. However, the final order passed was as under :

"If the respondent (i.e. the authorities) are so minded, they can proceed against the students in accordance with law and after faithfully complying with the principles of natural justice *(Rohtas Singh Vs. Haryana, S.B.T. Education, AIR 1988, P & H 91)*.

Note : It must be noted that the High Court did not order the authorities to admit the student. No doubt, it set aside the order of expulsion but gave option to the authorities to proceed against students according to law and after following principles of natural justice. Thus the authorities were given an opportunity to take action against the erring students according to law.

Orissa High Court laid down that cancellation of examination in a paper in which malpractices including copying, were alleged was legal. However cancellation of the entire examination was not justified (*Debadutta Vs. Berhampur University, AIR 1988, Orissa 156, Division Bench*).

The Kerala High Court laid down that examinations can be cancelled by the Syndicate (Executive Council) even after the results are published. (*R.C. Jayaprasad Vs. Controller of Examinations, Trivandrum, AIR 1988 Ker 191)*.

General

I. Private tuitions by teachers have become a national problem. Such problems assume greater significance in view of the harrassment of students by such teachers when they become examiners at public examination. A classical example of such harrassment is reported in *Jyoti Lonkar Vs. M.B.S. & H.S.C. examination, AIR 1988 Bom. 177.* Readers are recommended to read the original judgment for details. The facts narrated in the judgment are a matter of shame to the teaching profession.

II. A candidate must possess the requisite qualifications at the date of the application for admission and not later (*Dr. M.J. Varghese Vs Director, Medical Education, AIR 1988 Ker. 200*). ☐

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The Task of Nation Building

"Nation-building does not consist merely of economic development—of industrialisation and the expansion of agricultural production, education and health facilities. Nation-building is even more a matter of emotional integration", said Shri H.Y. Sharada Prasad, Secretary, Indira Gandhi Memorial Trust and former Information Adviser to the Prime Minister while delivering the Convocation Address at the Fourth Annual Convocation of Bharathiar University, Coimbatore. Shri Sharada Prasad added, "We can call ourselves emotionally evolved when we feel others' pain as our own. The nation is integrated when its citizens, whichever part they may happen to be born in, feel that the whole country is theirs and that they are at home in every part of India". Excerpts

Convocation

A nation's problems never end. They only change. We complain at our inability to wipe out poverty in four decades of independence. Yet nations which have succeeded in riding themselves of poverty are not without cares or worries. As Jawaharlal Nehru was fond of reminding us, to be alive is to have problems; it is the dead who have no problems. It is only in fairy tales that two persons marry and live happily ever afterwards. In real life, marriage is the starting point of a series of adjustments to make.

I urge you to realise that although we became a free nation forty years ago, the task of nation-building is not over. Nation-building does not consist merely of economic development—of industrialisation and the expansion of agricultural production, education and health facilities. Nation-building is even more a matter of emotional integration. We can call ourselves emotionally evolved when we feel others' pain as our own. The nation is integrated when its citizens, whichever part they may happen to be born in, feel that the whole country is theirs and that they are at home in every part of India.

Such nation-building is a continuous process. It is not the responsibility of government alone, but of every organisation, indeed every citizen. It is a pity that this fact is not appreciated sufficiently by our press, our universities, and our political parties, who seem to assume that India will survive on its own, no matter how many blows are delivered to national wellbeing through fundamentalist rampage, through regional agitations, and through recourse to violence to enforce economic demands.

"Eighteen are her tongues for utterance, and yet her heart is one", Bharathiar said of the Motherland. No nation surpasses us in sheer multiplicity of languages, religions, castes and social strata. Yet we are all Indians. We are one nation parcelled out into 25 States; we are not a nation which arose from any compact among or coming together of previously existing States. Unity in diversity and diversity in unity are the condition of India's existence as a civilisation and a nation. If we commend to the world the idea of coexistence, it is because our long history has proved the efficacy of coexistence as a reconciler and unifier. Even the United States of America, where the concept of the melting pot held sway, and where all the people were expected to speak one common language, is finding that people resent and resist being forced into uniformity. In fact, Henry Steele Commager, a renowned historian of America, claims that from the beginning, intellectual and spiritual diversity has been as characteristic of America as racial and linguistic diversity. Furthermore, even though USA has been a sovereign nation for more than 200 years, its schools even today take care to emphasise the unifying factors. All school children there are daily expected to take a pledge to the nation. India has never regarded itself as a melting pot. We are rather a mosaic, in which the various components retain their shape and colour and texture, while together making a vibrant, distinctive pattern.

Language has been one of the most difficult issues in our nation-building. Few subjects generated as much passionate debate when our Constitution was drafted. A common language is commonly believed to a condition precedent of nationhood. But the Constitutions of the Soviet Union and the Indian Union—countries with enormous linguistic diversity—had to evolve a different approach. We knew in India that our mother tongues, most of which have rich literatures and proud antiquities, could not be wished away or wiped out. In fact the recognition of a unified national destiny had to be achieved through a multiplicity of tongues. We knew also that democracy could be real only if politics was conducted in the mother-tongue. Otherwise government would be limited to the elite. It is this knowledge which led Mahatma Gandhi to organise the units of his party on linguistic lines. Other parties adopted the same pattern. It was inevitable that after the attainment of freedom and the integration of princely dominions, our States should be reorganised on linguistic lines.

Some commentators contend that linguistic States are a mistake and have retarded the economic and political progress of our country. Every now and then we hear administrative experts proposing a unitary form of government in the name of greater efficiency. They want the country divided up into districts of roughly equal size conforming to agro-climatic zones. Such prescriptions reveal ignorance of politics and the Indian reality. Politics does not revolve only around interests but around loyalties. Man does not live by bread alone. Mother, motherland, mother-tongue, and mother religion evoke strong emotions. They are powerful motors of political action. Linguistic States cannot be abolished. It is fatuous to think they can.

Having said this, we must ask ourselves if excessive linguistic chauvinism is doing us good. When poets and novelists pass angry resolutions at literary conferences about State borders, demanding that this town or that village be attached to their province, one cannot help feeling that something is basically wrong. Will their poetic or creative imagination function better thereby? Can a language grow by official fiat? Government can print books, finance literary organisations, give grants to libraries. But governments cannot improve poetry or prose. It is true that forms, applications, announcements, bills, notices, signboards and so on should be in the local language. But these do not lead to literary enrichment. Letters in Hindi or Tamil or Marathi to people saying that the government regrets that so-an-so's application has been rejected will not add beauty or power to the language or deepen its resources. Bureaucrats can at best generate a bureaucratic jargon, officialese, which is often the enemy of good writing. This is what has happened to Hindi as a result of the intervention of Central departments. Let poets concentrate on writing poems. Let language enthusiasts remove illiteracy, holding classes for adults. What our languages need is greater experimentation to evolve simpler, comprehensible vocabularies. We need more books in easy style on a greater variety of subjects. I find it comical that many legislators who write letters to their brothers and sons in English demand to know how many letters the government writes in the Raj-bhasha or the State language.

I come to the very touchy subject of Hindi. Instead of grasping the nettle myself, I shall content myself with reminding you of the recent, most authoritative pronouncement on it. The Commission on Centre-State Relations, headed by Justice R.S. Sarkaria, has devoted a whole section to language. It has observed :

"Language can be a powerful unifying as well as a divisive force. depending on how it is handled... Friction in Union-State relations in the sphere of language arises out of an apprehension that imposition of the language of one section of the population on others who have different mother-tongues is but a precursor to economic and social domination."

"Experience of the past thirty-seven years has more than anything demonstrated that misplaced zeal to impose the use of Hindi or a particular State language as a medium of instruction on those whose mother-tongue is different has invariably proved to be counter-productive. This only shows that in the area of language, there is need to cultivate forbearance and caution."

The Commission goes on to make a series of suggestions and warns that "unless sorted out in the near future, the language problem may become very explosive in a few years' time" Let us hope that this grim warning will be heeded. The country has enough explosive situations to handle. It should not invite another.

But the language problem is not merely a problem affecting Centre-State relations. The Sarkaria Commission analysed only that aspect, because of its terms of reference. There are other aspects of the language problem which intimately affect the lives of individuals and the very future of our society. The stress on the mother-tongue in higher education and the concomitant preference for sons of the soil in appointments has wrought infinite harm to our Universities. By being satisfied with the second best on the specious plea that it is home-grown, our Universities are ceasing to be store-houses of values and generators of ideas. If you look at the histories of our Universities, you will find that their golden ages were those in which the professors had been drawn from all over the country.

We should beware of anything that narrows the economic and intellectual opportunities open to our young people. Mobility is the secret of a person's success and a nation's growth. Our young should be able to make their way in any part of India and any country of the world. What will enable them to do so is a knowledge of more languages. Apart from the study of the mother-tongue, they should have opportunities to acquire proficiency in other tongues. Some years ago, when the Gujarat University decreed that all instructions should be in Gujarati, employment notices in Bombay newspapers contained a line to the effect : "Graduates of Gujarat University need not apply." Let our political leaders ponder what will best safeguard the future interests and careers of the young. We are realising in industry the harmful effects of protectionism. It discourages innovation and quality. Protectionism in the matter of language will have similar baneful consequences for the language as well as for the mind.

Who knows India and Indian literature if he knows only Tamil Nadu and Tamil literature or Karnataka and Kannada literature ?

Educationists might join issue with me by pointing out that instruction through the mother-tongue is most conducive to the absorption of ideas and concepts. I shall not quarrel with this. But if we look at Europe we find that most University students there today know two or three languages. If Western Europe is a Common Market in respect of employment so is India. Hence the need for a working knowledge of more than one Indian language and more than one international language This will not be a burden. For, as Mahatma Gandhi had proclaimed, an Indian is essentially bilingual, even trilingual.

"I would not have a single Indian to forget, neglect or be ashamed of his mother-tongue or to feel that he or she cannot think or express the best thoughts in his or her own vernacular" said Mahatma Gandhi. He went on to say, at the same time, "I would have our young men and women with literary tastes to learn as much of English and other world languages as they like and then expect them to give the benefits of their learning to India and to the world like a Bose, a Roy or the Poet (Rabindranath Tagore) himself." It is in this very passage that those famous lines of Mahatma Gandhi occur : "I do not want my house to be walled in on all sides and my windows to be stuffed. I want the cultures of all lands to be blown about my house as freely as possible. But I refuse to be blown off my feet by any." What better or wiser credo can we have than this ?

Besides militant localism, there is another weakness to which our academics are prone—a pseudo-universalism, the feeling that in order to prove one's intellectual independence and acumen one has to run down one's countryr. If I might recount a personal experience, at a conference in Europe a few years ago, I encountered a British diplomat who put forth the theory that Mahatma Gandhi had delayed Indian freedom and was responsible for India's division. The argument was that the British were determined to transfer power and Gandhi's tactics came in the way. This amounted to saying that there would be more Christians in the world if Jesus Christ hadn't been born. The surprise was not that the British Lord made such an astounding statement, but that an Indian political scientist warmly supported him.

In the final analysis, the custodians of a nation's. life are its political parties. An eminent editor recently admonished the Indian middle-class, especially the academics, for being sniggering about political institutions and expecting miracles from the press and the judiciary. Where do parties get most of their recruits from? And their ideas? From the Universities and from the legal profession. If national life suffers from inadequacies and failings the remedy comes basically from these institutions—the Universities, the press and the judiciary. We need a rejuvenation of all three institutions in our country. Such rejuvenation can come only from within them. It is no use their blaming governments all the time.

As a person who started his working life as a journalist, I have to line up behind the freedom of the Press. This freedom has proved to be the guarantor of other political freedoms. The fear of public exposure has acted as a powerful disincentive to wrongdoing. Yet it is a fact that many sins have been committed in the name of the freedom of the Press. You would have heard of the saying that a doctor buries his mistakes, a lawyer hangs his, but an editor prints his in bold type. Invasion of people's privacy is bad enough. Irresponsibility in handling public matters is worse. Unverified reports have often resulted in communal riots and the death of innocent people. Radio and television have an even greater impact over the lives of the people. Their reach is widespread and instant. That is the reason why in countries where coups occur, the rebels first seize radio and television stations. Even in the fortunate countries where such dismal events do not occur, a mistake uttered on radio and television is hard to chase and correct. There is considerable debate in the country on the need for decentralised control over the media, to enable a flowering of regional cultures. This is an unexceptionable objective. But if diffusion of control gives a chance to mischievous elements to stir up religious, caste and linguistic passions in a country which is like a tinder-box, the consequences will be dangerous. You will recall that some years ago there was a demand for broadcasting facilities from within the Golden Temple in Amritsar. It was rightly rejected. You can imagine how much more violence there might have been if the demand had been conceded. Any proposal in politics has to be viewed in terms not of abstract principle but of practical consequence.

The unfinished and continuing task of nation-building in our vast and complex land requires a new approach to language. We have politicised it too long. It is time to adopt a more relaxed and practical approach to language. Language basically is a human tool. Its function is to build a society. Without communication there is no community. Let us concentrate on the constructive aspects of language the ones that bind and unite and not the ones that separate and divide. Let us use it as a means of enlargement of knowledge and enrichment of the spirit. If we care for India, and for our own good, we must stop squabbling and breaking heads over language.

THE ISSUE AT MITHILA

(Continued from page 2)

some kind of a background note on the subject (to call it a white paper might be described as provocative) and present it to the Central Advisory Board of Education (CABE). This body has so far never been asked to consider this question. Now when it is asked to do so, there would be exchange of hot words, loss of temper, mutual recriminations and a number of arguments in regard to the Centre-State relations and what not. In other words, the CABE would not easily accept the proposition that the Centre gets any kind of a right to intervene in these matters in the states. All these years the states have exercised unrestricted powers. To have those diluted in any way would be unacceptable to them.

Were the Centre to persist however and refer the matter to some kind of a sub-committee consisting of half a dozen Education Ministers and so on, sooner or later some kind of a consensus will emerge. This consensus, for obvious reasons, cannot be in total contradiction to what is stated in the New Policy on Education; there has to be some kind of an alignment between what is stated in the policy and what the consensus is. However soft or diluted it is, it would be some advance upon the existing situation.

What next? To leave it at that would not achieve all that much. On the contrary, it would be desirable that the consensus is then embodied in a piece of formal legislation. The Centre has powers to do that; only it hesitates to use those powers because of reasons already stated. But once a consensus emerges, it would not be indefensible to give legislative expression to what has been agreed upon.

It is not the occasion to go into the details of any such likely legislation. But the great merit of any piece of legislation will be that it would be interpreted by the Courts and not by ministers or officials. Both of them can go wrong in terms of their likes and dislikes and various other considerations which need not be referred to. But if the matter is open to judicial interpretation, there would be greater acceptability and less of whimsicality and unpredictable behaviour.

It is time that this issue was given some attention. The usual attitude is that the situation is so hopeless that nothing can be done. Maybe nothing will get done as a result of this exercise either. But, as many people would agree, the exercise is worth undertaking. Indeed if it is undertaken, some good will emerge from it though it may not be as much as one would like to see. □

UGC Team Visits Open University

A ten-member UGC Expert Committee visited Andhra Pradesh Open University on 8-9 September, 1988 for a mid-term appraisal of the Seventh Plan programmes. The team comprised Prof. K.G. Deshmukh, Vice-Chancellor, Amravati University; Prof. V.R. Mehta, Vice-Chancellor, Kota Open University; Prof. V. Abraham, Director, School of Correspondence Courses, Waltair; Prof. Shanmugam Director, School of Correspondence Courses, University of Madras; Prof E.I. George, Special Officer, Kerala State Open University; Prof. Ruddar Datt, School of Correspondence Courses, University of Delhi, Prof. S.P. Bhatt, Department of Philosophy, University of Delhi; Shri K.V. Varma, Under Secretary, UGC; Sri Chandra Swaroop, Section Officer, UGC and Prof. Ram Takwale, Department of Physics, Poona University as its Convenor.

The team visited the audio-video studios of the University and witnessed some video lessons. It also went round an exhibition put up by the University and showed keen interest in the course materials displayed thereat. The team was also shown the first prize winning entry for the university building complex and were briefed on its salient features. The Director, Students Services accompanied the team to two study centres at A.V. College and Pragati Mahavidyalaya Degree College. The visiting team also acquainted themselves with the working of the various branches of the University like Academic, Evaluation, Students Services, Examination and Material Production and held detailed discussions with the officials.

The team also met the members of the Planning Board of the Andhra Pradesh Open University and had wide-ranging discussions on the future plans of the Uinersity. Prof. G. Ram Reddy, Vice-Chancellor. Indira Gandhi National Open University; Prof. T. Navaneeth Rao, Vice-Chancellor, Osmania University; Prof. M. Abel, Former Vice-Chancellor, Sri Krishnadevaraya University; Prof. S.K. Varma, Director, Central Institute of English and Foreign Languages; Prof. G.J.V. Jagannadha Raju, Vice-Chancellor, Nagarjuna University attended. The team was visibly impressed with the progress made by the University during a short span of six years.

Manipur Varsity to Set Up Research Centres

The University Grants Commission (UGC} has approved the proposal of Manipur Universty to set up two research centres, namely, (a) Centre for Manipur Studies; and (b) Centre for Tribal Studies during the VII plan period. The two centres will function independently but will have centralised facilities. They will often interact academically and exchange data and conduct field studies jointly wherever possible. The Centres will have an Advisory Committee with the Vice-Chancellor as its Chairman and some outside experts.

The Centre for Manipur Studies proposes to undertake research on: (a) Manipuri Language and Literature; (b) Linguistics; (c) Manipuri Culture; (d) Manipuri Folk-lore; (e) Manuscriptology; and (f) Lexicography.

The Centre for Tribal Studies initially proposes to undertake the following interdisciplinary research projects : (a) Socio-political aspects of the tribals of Manipur; (b) Ethno-history of Manipur; (c) Economic developments of the tribals with focus on tribal demography and tribal land system; and (d) Communication among tribals.

Both the centres will undertake macro and micro level research in various areas and also conduct multidisciplinary and collaborative research programme. The proposed areas of researches are also relatively unexplored and the two centres hope to fill the existing gap in the studies on North East India in general and Manipur in particular.

Academic Staff College at Karnatak University

The primary objective of the newly established Academic Staff Colleges is to inculcate the importance of human values and enable the teachers to orient themselves towards a new approach to teaching and to their students, said Dr. G.K. Narayan Reddy, Vice-Chancellor of the Karnatak University. Dr. Reddy was presiding over the Valedictory Function of the 5th Batch of the Academic Staff College of the Karnatak University. He advised the participants to develop scientific thinking.

Dr. J.V. Gouda, Vice-Chancellor of the University of Agricultural Sciences, Dharwad, speaking as the Chief Guest, regretted that the same old colonial system of education which does not have any relevance to the needs of today was being followed. He pleaded for delinking of jobs from higher education and asked the teacher participants not only to develop talking skills but also teaching skills.

In his report, Dr. V.C. Chavadi, Director of the Academic Staff

College, said that in the 5th Batch, 35 newly appointed lecturers from different colleges of Karnatak and Gulbarga Universities attended the Orientation Programme conducted by 82 Resource Persons. The participants of this batch belonged to various science faculties.

Sangit Vishwavidyalaya Elections

The Indira Kala Sangit Vishwavidyalaya, will hold the next election of Five Representatives to the Vishwavidyalaya Sabha (Court) from among the Registered Graduates of the University in January, 1989. Persons who held Vid or Kovid of the University or an equivalent recognised examination or a Degree of the Vishwavidyalaya or an equivalent recognised examination and are at least 18 years old shall be eligible for registration. Prescribed application form for registration may be obtained from the Registrar of the Universiiy. The registration fee of Rs. 50 should accompany the application. Persons who are registered as Registered Graduates of the University by such date as may be notified, will be eligible to vote and contest at the ensuing election.

MBA in Rural Management

The Punjabi University has introduced an M.B.A. Course in Rural Management at Guru Kashi Institute of Advanced Studies, Damdama Sahib (Talwandi Sabo) from the current academic session.

News from Agril. Varsities

Cheap Fodder for Livestock

The animal nutritionists of the Pantnagar University claim that mushroom spent wheat straw will prove to be a cheap, digestible and nutritious source of fodder to livestock in future. It will successfully replace crop residue straws as are mainly available to ruminants as staple feed resources without affecting the digestibility and intake of animals.

In an experiment conducted by the P.G. student, R.B. Chaudhary under the guidance of Dr. M. Singh and A.D. Tewari of the Animal Science Department, to study the effect of feeding fungal (Pleurotus sajar caju) treated straw on the digestibility and intake of nutrients utilization in crossbred growing heifers, it was found that whereas the crude protein content of the spent straw rose from 3 per cent in the untreated straw to 7 per cent, dry matter digestibility of the straw also increased due to degradation of the lignin content. It was also observed that animals fed on fungus straw showed tendency to consume more dry matter.

In addition to this, spent straw can be more conveniently stored as a rescue fodder during periods of emergency.

It has also been claimed that this biological treatment of the wheat straw for enrichment of the fodder costs less and is free from pollution.

National Seminar on Bee-Keeping

Dr. Sukhdev Singh, Vice-Chancellor of the Punjab Agricultural University (PAU) while inaugurating a 12-day National Seminar-cum-Workshop on Bee-Keeping said that Punjab produced 650 tonnes of honey annually contributing Rs. 11 crore to the State economy. Tracing the history of bee-keeping, the Vice-Chancellor reminded the audience that Dr. A.S. Atwal, a former Dean of the University and presently member of the Punjab State Planning Board and his associates had done a pioneering work in introducing Italian honey-bees and the Punjab farmer had quickly adopted this profession. Bee-keeping could provide more job opportunities to the unemployed rural youth. Keeping in view the tremendous increase in honey production, the Vice-Chancellor urged the State Government to provide suitable marketing facilities for honey.

Dr. B.S. Chahal, Professor of Entomology (Extension) said that in Punjab more than 7,000 farmers with 70,000 colonies were engaged in the profession of bee-keeping and that the State ranked third in honey production. He further observed that bee-keeping had proved to be a major tool in diversification of agriculture and for self-employment of the rural youth.

The Seminar sponsored by the Union Ministry of Agriculture was attended by more than 20 delegates from Punjab, Haryana, Himachal Pradesh and Jammu & Kashmir.

Plant Protection Seminar

First "All India Workshop-cum-Seminar on Plant Protection in Horticultural Crops" was recently organised by the Directorate of Extension Education of Dr. Y.S. Parmar University of Horticulture and Forestry in collaboration with Directorate of Extension Education, Govt. of India, Ministry of Agriculture. Dr. M.R. Thakur, Vice-

Chancellor, Dr. Y.S. Parmar University of Horticulture and Forestry said that Plant Protection is one of the most important orchard management practices for protecting of the orchards, vegetables, flowers, right from the sowing of seeds uptill the last stage of Plants. Dr. Thakur, who was addressing the valedictory function, advised the delegates to further disseminate the knowledge of the Plant Protection Methods to the growers and the farmers.

The real aim of this workshop-cum-seminar was to discuss the future strategies in Plant Protection specially in fruit crops, vegetables, mushroom growing, beekeeping, floriculture and other allied subjects and to finalize recommendations for future in view of the increasing area under Horticultural crops to meet the requirements of large population of the country.

During the three week seminar the scientist and Plant Protection specialists delivered talks on various subjects concerning Plant Protection methods and its importance in future. The main emphasis was laid on preservation of Plant Genetic resources, insect pests' management, strategies advocating judicious use of pesticides keeping in view the purity of the eco-system both for environment and human health.

23 delegates from 10 states of the country participated in the workshop.

Training Farm Women

In the sector of Agriculture, including Horticulture and Aanimal Husbandry, women have made significant contribution with their extensive involvement of eight out of every ten persons working in the fields. However, they are not in the mainstream of development and hardly any concrete efforts are being made for improving their skill in home-making and farming system. Realising the importance of training of rural women folk, a series of training courses were organised in different areas of Home Science by Krishi Vigyan Kendra of Sher-e-Kashmir University of Agricultural Sciences and Technology during April-August 1988. The Programme covered more than 100 farm women beneficiaries as per details green below :

Training Course	No. of Women participants
1. Imparting skill in knitting of garments	25
2. Breast feeding and Weaning of Infants	28
3. Demonstration on prepartion of Low-cost recipies for infants	28
4. Training in embroidery work	25

One of the unique features of these training progammes is that besides demonstration, critical inputs related to course were given free of cost to the participants enabling them to adopt technologies. While appreciating the efforts of Krishi Vigyan Kendra in embroidery course on 30th of August, 1988 in village Sunrigund, women invariably expressed their demand for more training courses in food nutrition, home management and textile-clothing. According to Dr. M.P. Gupta, Chief Training Organiser of the kendra, more vigorous efforts are being made for training of women in all aspects of 'Home Sciences' for happy and prosperous homes. In addition, looking into small size holdings of less than 1 acre in the valley, it is proposed to educate and train women in "Mixed Farming" for higher returns.

New Soybean Variety

In its efforts to develop a high yielding disease free early maturing soybean variety with better germination, the Pantnagar University has evolved a latest Soy-variety PK-564 which has since been identified for release for the northern plains of the country by the XIXth Annual Soybean Workshop held at Tamil Nadu Agricultural University, Coimbatore.

The variety which matures in 110-115 days yields 2359 Qtls./ha. and is resistant to yellow mosaic and bacterial pustules. Besides, it is free from shattering and lodging.

Communication

Dear Sir,

For obvious reasons, the five star need of networking of the university libraries cannot be avoided even though the utilisation quotient of the library as such is low. (Article on Networking of University Libraries : *University News* 8-8-88 refers). I would say in ordering the priorities, the development of technical manpower should receive the first attention over others. If not, the system will suffer from a very long gestation period and the outcome may not meet the expectations.

Yours etc.

V. Narasimhan
Registrar
Sree Chitra Tirunal Institute for
Medical Sciences & Technology
Trivandrum

News from UGC

INSAT-1B Programme of UGC

Between 1st October to 7th October, 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel

1.10.88

"Water Sports : Yachting—I"

"Reflections on Eisenstein"

"Safety First"

2.10.88

No Telecast

3.10.88

"Raw Materials : Sugar"

"Understanding Money—II Invention of Money"

"Optical Microscopes—I"

4.10.88

"Naming the Organic Compounds"

"Learning : Its Nature and Characteristics"

"For the Love of Animals"

5.10.88

"The Equipment Bridges and Rafts"

"Propagation"

"Art of Ajantha—I"

6.10.88

"Dr. Meghnad Saha—I : The Man"

"Women in Indian English Literature"

"A Volcano is Born"

7.10.88

"Grou Theory"

"Time Keepers of Centuries—VI"

"Road to Stars"

News from Abroad

Training Teachers for International Education

A Unesco sponsored sub-regional seminar was held in Malang (Indonesia) from 22 to 26 August for teachers from teacher-training colleges from 10 Member States, viz., Australia, China, Democratic People's Republic of Korea, Indonesia, Japan, Malaysia, Philippines, Republic of Korea, Thailand and Viet Nam.

The first of its kind in Asia, the seminar was designed to acquaint the participants with the results of research carried out by teacher-training colleges in 1986-1987 to develop teaching methods that will promote education for international understanding, co-operation and peace and human rights teaching. The participants also discussed ways to establish appropriate methods for the promotion of international education to be used in each of the countries in the sub-region, and the means of strengthening regional co-operation in this educational field. In addition, the teachers presented country papers in which they described their national experience and the results of innovative experiments carried out in their respective countries.

As part of the follow-up activities, the teachers will make known the results of the seminar to the teacher-training colleges in their countries and will try to implement them in their colleges. Each of the participants will also keep the others as well as Unesco informed as to what he or she will be doing in the colleges in the field of international education, for example, introducing such education in curricula, producing teaching materials, organizing national seminars, etc.

The results of the activities thus undertaken in the Asian subregion will also be shared with other regions.

Krupskaya Prize for Angolan Literacy Centre

The international jury responsible for awarding the literacy prizes met at Unesco Headquarters from 24 to 26 August to select the winners under the chairmanship of Dr. Malcolm Adiseshiah (India), Director of the Madras Institute of Development Studies.

At the end of its meeting, during which it examined

25 candidatures submitted by governments and non-governmental organizations, the jury unanimously decided to award the Nadezhda K. Krupskaya Prize, established in 1969 by the Government of the Union of Soviet Socialist Republics, to the *National Literacy Centre of Angola.*

At the time of its independence in 1975, Angola was faced with an 85 per cent illiteracy rate, which constituted a major obstacle to economic and social development. A year later, a National Literacy Commission and a National Literacy Centre were set up, to be followed by several similar structures at the provincial and local levels.

Thanks to the literacy campaign which is in its 14th stage, 1,096,284 persons have acquired literacy skills, with 6,568,603 enrolled in the courses in a country with a population of nearly nine million. The jury's choice was motivated by these exceptional results which, it emphasized, were achieved "despite material difficulties and war".

The decision also cites efforts towards training young volunteer literacy workers and mobilizing youth organization, trade unions and government bodies.

We Congratulate . . .

1. **Prof. R.N. Singh who has taken over as Vice-Chancellor of the Sukhadia University, Udaipur.**
2. **Dr. H.R. Mishra who has been appointed Vice-Chancellor of Birsa Agricultural University, Kanke, Ranchi.**
3. **Prof. D. Ramakotaiah who has been appointed Vice-Chancellor of Nagarjuna University.**

AIU News

Paul Committee Meets

The Fact-Finding Committee of former Vice-Chancellors set up by the Association of Indian Universities under the chairmanship of Prof. R.C. Paul, Former Vice-Chancellor, Panjab University to consider the removal of Vice-Chancellors in Bihar and the Vice-Chancellor of Dr. Harisingh Gour Vishwavidyalaya, Sagar held its first meeting at AIU House on 21st September, 1988. The meeting was attended by Prof. Rais Ahmed, Former Vice-Chancellor, Kashmir University; Prof. M.V. Mathur, Former Vice-Chancellor, Rajasthan University; Prof. M.M. Chakrabarty, Former Vice-Chancellor, Jadavpur University; Prof. (Mrs) Vanaja Iyengar, Former Vice-Chancellor, Sri Padmavati Vishwavidyalaya and Prof. S.K. Agrawala, Secretary, AIU. Prof. R.C. Paul presided.

The Committee considered the material that was thus far available to it as well as the press reports appearing in various newspapers. It expressed its deep anguish and concern over these unfortunate happenings in Bihar and Madhya Pradesh. The Committee has decided to get in touch with the Secretaries to the Chancellors of Universities in Bihar and Madhya Pradesh as well as with the Education Secretaries at the Centre and in the States concerned and also with the UGC, with a view to ascertain the facts.

The Committee is also trying to get in touch with some of the Vice-Chancellors who have not as yet contacted the Committee and after having contacted and discussed the facts with all concered, the Committee shall present its report to the Standing Committee.

INTER-UNIVERSITY YOUTH FESTIVALS 1988-89

Zone	Venues	Dates	Contact Cultural Coordinator
East	Sambalpur University, Sambalpur (Orissa)	Oct. 12-15, 1988	Dr. K.C. Dash NSS Coordinator Sambalpur University Sambalpur
South	Bharathidasan Univ., Tiruchirapalli Tamil Nadu	Oct. 25-28, 1988	Prof. H. Md. Salahudeen NSS Coordinator Bharathidasan Univ. Tiruchirapalli
North	C.S. Azad Univ. of Agriculture & Technology, Kanpur U.P.	Nov. 13-16, 1988	Dr. D.C. Kulshrestha Dean, Students' Welfare C.S. Azad Univ. of Agriculture & Technology Kanpur
West	Devi Ahilya Vishwavidyalaya, Indore (M.P.)	Nov. 20-23, 1988	Dr. R.K. Dubey, Dean, Students' Welfare Devi Ahilya Vishwavidyalaya, Indore
National	Indian School of Mines, Dhanbad	Jan. 31 to Feb. 4, 1989	Prof. R.K.S. Chouhan Dean, Students' Affairs Indian School of Mines Dhanbad

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A List of Research Scholars Registered for Doctoral Degrees of Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Helmi, Ali Mohammad. *Theory of relativity.* BHU. Dr. T. Singh, Department of Applied Mathematics, Banaras Hindu University, Varanasi.

2. Manoj Kumar, M. *Operations research.* Kerala. Dr. S. Madhavan, Prof., Department of Mathematics, University of Kerala, Trivandrum.

Physics

1. Abraham, Sunila. *Infrared, Raman and phase transition studies of certain crystals.* Kerala. Dr. G. Aruldhas, Prof., Department of Physics, University of Kerala, Kariavattom.

2. Augustine, Simon. *Characterisation of high temperature superconducting compounds by X-ray and other techniques,* Kerala. Dr. P.S. Mukherjee, Scientist, Regional Research Laboratory, Trivandrum.

3. Bhattacharya, Sumana. *Scintillations caused by atmospheric homogeneities : Their effect on radio communication.* Delhi. Dr. Narinder Nath, Department of Physics, University of Delhi, Delhi and Dr. B.M. Reddy, National Physical Laboratory, New Delhi.

4. Binay Kumar. *Growth and characterization of pure single crystals of polytypic compound.* Delhi. Prof G. C. Trigunayat, Department of Physics, University of Delhi, Delhi.

5. Chawla, Poonam. *Factor measurements of high span nuclear states.* Delhi. Prof. S. L. Gupta, Department of Physics, University of Delhi, Delhi.

6. Goel, Ajay. *Quake and leptonic physics.* Delhi. Dr. A. N. Mitra, Department of Physics and Astrophysics, University of Delhi, Delhi.

7. Gupta, Anil Kumar. *Medico-physical studies in macromolecules with special reference to HTV.* Delhi. Prof. Madan Mohan Bajaj, Department of Physics and Astrophysics, University of Delhi, Delhi.

8. Gupta, Mohan Lal. *Study of stratospheric chemistry.* Delhi. Prof. C.S.G.K. Setty, Department of Physics, University of Delhi, Delhi and Dr. Narinder Nath, Department of Physics, University of Delhi, Delhi.

9. Jeeva Prakash, J. Winston. *Atmospheric boundary layer studies at Thumba.* Kerala. Dr. K. Narayanan Nair, Space Physics Laboratory, V.S.S C. Trivandrum.

10. Kashyap, Alok. *Investigations on fluorescence emission and absorption spectra of molecules.* Delhi. Dr. M. K. Machwe, Department of Physics, University of Delhi, Delhi.

11. Majumdar, Sujoy. *Non linear dynamics and flow.* Delhi. Dr. V.S. Verma, Department of Physics and Astrophysics, University of Delhi, Delhi.

12. Om Prakash. *Thermal expansion and related properties of high to superconductors.* Delhi. Prof. P.N. Dheer, Department of Physics, University of Delhi, Delhi.

13. Pancholi, Vineet. *Application of transient fields to study moment of high span nuclear states.* Delhi. Prof. S.L. Gupta, Department of Physics, University of Delhi, Delhi.

14. Rajeev, K. *Studies on the dynamics of the low latitude middle atmosphere.* Kerala. Dr. C. Raghava Reddy, Space Physics Laboratory, V.S.S.C., Trivandrum.

15. Rao, Ashok. *Measurement of thermal expansion and related properties of high to superconductors.* Delhi. Prof. P.N. Dheer, Department of Physics and Astrophysics, University of Delhi, Delhi.

16. Santha, N. *Investigation of the structure of certain crystals and starch.* Kerala. Dr. V. Unnikrishnan Nair, Prof., Department of Physics, University of Kerala, Kariavattom.

17. Satyanarayan, B.S. *Study of hydrogenated amorphous silicon preparation and properties.* Delhi. Dr. Raj Rup, Department of Physics, University of Delhi, Delhi and Dr. V.V. Shah, National Physical Laboratory, New Delhi.

18. Singh, Kongham Chandramani. *Positron annihilation studies in high to superconductors.* Delhi. Prof. P.C. Jain, Department of Physics, University of Delhi, Delhi.

19. Srivastava, Vivek. *Study of laser Raman spectra of the complex molecules.* Delhi. Prof. M.K. Machwe, Department of Physics, University of Delhi, Delhi.

20. Verma, Sudeep Kumar. *Study of Raman scattering of organic compounds using laser as a source.* Delhi. Prof. M.K. Machwe, Department of Physics, University of Delhi, Delhi.

Chemistry

1. Shukla, Rama Kant. *Spectrophotometric determination of metals at trace level after separation of their complexes with naphthalene.* Devi Ahilya. Dr. K.K. Pande, Reader, School of Chemistry, Vigyan Bhawan, Khandwa Road, Indore.

Engineering & Technology

1. Singhal, Dhirendra. *Structural engineering.* BHU. Dr. Ramji Agrawal, Department of Civil Engineering, Banaras Hindu University, Varanasi.

2. Sreedevi, B.G. *Study on the deflection behaviour of skew and circular sandwich plates using Chebyshev polynomials and integral equations.* Kerala. Dr. N. Ramachandra Rao, Institute of Management in Government, Trivandrum.

BIOLOGICAL SCIENCES

Biochemistry

1. Raveendran Pillai, K. *Investigations on O. Pharyngeal carcinoma.* Kerala. Dr. Venugopal P. Menon, Reader, Department of Biochemistry, University of Kerala, Trivandrum and Dr. M. Krishnan Nair, Director, Regional Cancer Centre, Medical College P O., Trivandrum.

Medical Sciences

1. Banerjee, Parna. *Immunopathology.* BHU. Prof. Ratan Mala Gupta, Department of Pathology, Banaras Hindu University, Varanasi.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities.

PHYSICAL SCIENCES

Mathematics

1. Kalyani, Vijay Kumar. *A study on the propagation of elastic waves through media having irregularities.* ISM. Dr. B. K. Kar, Department of Applied Physics, Indian School of Mines, Dhanbad.

2. Pal, Bidyut Kumar. *Almost periodicity and non-absolutely convergent integrals.* Burdwan. Prof. Satyanarayan Mukhopadhyay, Department of Mathematics, University of Burdwan, Burdwan.

3. Paliwal, Dinesh Kumar. *Partial ordered algebraic structures.* Delhi.

4. Prasad, Narendra. *A study of self reciprocal functions.* Osmania.

5. Ray, Ashok Kumar. *Study of differentiable manifolds admitting some types of linear connections.* Calcutta.

6. Ray, Jayanti. *Some aspects of the inverse scattering method and non-linear evolution equations.* Calcutta.

7. Shrivastava, Manjulata. *Approximation and interpolation by Splines theory.* Durgawati. Dr. H.P. Dikshit, Vice-Chancellor, Rani Durgawati Vishwavidyalaya, Jabalpur.

8. Singh, Ghan Shyam. *Study of some inhomogeneous cosmological models in general relativity.* Rajasthan. Dr. Raj Bali, Department of Mathematics, University of Rajasthan Jaipur.

9. Taraphdar, Manjusha. *Study of certain types of Riemannian manifolds.* Calcutta.

Statistics

1. Dhabe, Manik Shridhar. *Investigations on some classes of non-Markov chains and their asymptotic properties.* Nagpur. Prof. A.B. Buche, Department of Statistics, Nagpur University, Nagpur.

Physics

1. Ahuja, Babu Lal. *Compton scattering studies of some H.O.P. metals.* Rajasthan. Dr. B.K. Sharma, Prof., Department of Physics, University of Rajasthan, Jaipur.

2. Das, Debajyoti. *Properties of amorphous silicon and transparent conducting oxide thin films.* Calcutta.

3. Indurkar, Aruna Vinayak. *Study of electrical properties of glass bonded lead zirconate ceramic material.* Nagpur. Dr. Miss Kamal Singh, Department of Physics, Nagpur University, Nagpur.

4. Ishwar, Nand Bali. *Spectroscopic studies of some rare-earth diatomic molecules.* ISM. Prof. B L. Jha, Department of Applied Physics, Indian School of Mines, Dhanbad.

5. Muralidhar, Chaturvedula. *Investigations on the preparation and characterization of barium titanate* (*$BaTiO_3$*)/ *polyvinylidana fluoride (PVDF) composites.* IIT, Delhi. Prof. P.K.C. Pillai, Department of Physics, Indian Institute of Technology, New Delhi.

6. Pal, Tusharkanti. *Study of molecular interaction and deactivation of excited states of some organic molecules.* Calcutta.

7. Saxena, Atul. *Measurement of heavy ion ranges in elemental and complex media using solid nuclear track detectors.* NEHU. Dr. K.K. Dwivedi, Department of Chemistry, North Eastern Hill University, Shillong.

8. Singh, Harinder Pal. *Oscillations of degenerate stellar masses.* Delhi.

9. Singh, Sardar. *Mixing effects of massive neutrinos, mirror leptons and right handed currents in some weak processes.* Rajasthan. Prof. N.K. Sharma, Department of Physics/ (CDPE), University of Rajasthan, Jaipur.

Chemistry

1. Batra, Sulekha. *Kinetics of formation of some complex oxides in solid state and their characterization.* Jammu. Dr. Indu Bhushan, Department of Chemistry, University of Jammu, Jammu.

2. Bhaskara Rao, M. *Kinetics of anodic oxidation of metals zirconium, zircaloy-2, titanium and niobium.* Osmania.

3. Das, Chittaranjan. *Studies on the coordination compounds of dioxouranium (VI) with phenylaceto and salicylhydroxamic acids and their analytical applications.* Calcutta.

4. Das, Mitali. *Investigations on lower-valent molybdenum complexes containing N—, P—, and O-donor ligands.* Calcutta.

5. Deb, Tulika. *Chemistry of some Indian medicinal plants and synthesis of natural oxygen heterocycles.* Calcutta.

6. Jha, Ajay Kumar. *Synthesis and characterization of some new metal complexes of hydrazone, dithiocarbazate and dithiocarbamate ligands.* Delhi.

7. Narasimha Ghar, P. *Some aspects of acid bromate—oxidation of organic compounds : A kinetic study.* Osmania.

8. Pal, Chandana. *Chemistry of 3-acylchromenones.* Calcutta.

9. Pandit, Uttamkumar. *Studies on heterocyclic compounds.* Calcutta.

10. Pandya, R.P. *Studies on corrosion inhibitors.* Bhavnagar. Dr. P.R. Mehta.

11. Parida, Gyan Ranjan. *Corrosion inhibition of nickel in neutral solutions by guanidine derivatives.* Delhi.

12. Ravi, Kavuru. *The triterpenoids of some Euphorbia species and Mangifera indica Linn.* Andhra.

13. Rustagi, Gajendra Kumar. *Organotin and allied derivatives of phosphorus oxy (thio) acids.* Rajasthan. Dr. G. Srivastava, Department of Chemistry, University of Rajasthan, Jaipur.

14. Sarkar, Siuli. *Salicyloyl derivatives of some amino acids as metal complexing ligands.* Calcutta.

15. Sherigara, B.S. *Kinetic and analytical investigations with aromatic halosulphonamides.* Mangalore. Dr. B. Thimme Gowda, Reader, Department of Chemistry, Mangalore University, Mangalagangotri.

16. Shrivastava, Kumud. *Structural investigations of steroidal and triterpenoidal constitutents of some medicinal plants.* HS Gour. Prof. V.K. Saxena, Department of Chemistry, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

17. Singh, Sukhvir. *Studies on analytical applications of some sulphur compounds.* Rajasthan. Dr. S.P. Mathur, Department of Chemistry, Govt. College, Beawar.

18. Srivastava, Vinod Shankar. *Physico-chemical investigations of sewage amended soil.* Rajasthan. Dr. R.C. Mehrotra, Department of Chemistry, University of Rajasthan, Jaipur and Dr. A.K. Rai, Department of Chemistry, University of Rajasthan, Jaipur.

Earth Sciences

1. Srivastava, Anjani Kumar. *Study on soil characteristics, distribution and soil conservation practices suggested in Khurai Block of District Sagar, Madhya Pradesh.* HS Gour. Dr. S.K. Mishra, Department of Applied Geology, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

Engineering & Technology

1. Anbarasu, R. *Electric drives suitable for flywheel energy storage systems.* IIT, Delhi. Prof. R. Arockiasamy, Instrument Design Development Centre, Indian Institute of Technology, New Delhi.

2. Bandyopadhyay, Anirban. *Studies on thermal dehydration of some hydroxides of transition metal cations.* Calcutta.

3. Chanda, Bhabatosh. *On preprocessing techniques for image analysis.* Calcutta.

4. Dubey, Ashok Kumar. *Production and stabilization of restriction endonuclease BamHI.* IIT Delhi. Prof. S.N. Mukhopadhyay, Biochemical Engineering Research Centre, Indian Institute of Technology, New Delhi and Dr. V.S. Bisaria, Biochemical Engineering Research Centre, Indian Institute of Technology, New Delhi.

5. Jain, Arun Kumar. *Studies on structure and morphology and their correlation with some properties of heat-set poly (ethylene terephthalate) fibres.* IIT, Delhi. Prof. V.B. Gupta, Department of Textile Technology, Indian Institute of Technology, New Delhi.

6. Krishnaiah, K. *Study and modelling of manual lifting capacity.* Anna.

7. Muthu, S. *Analytical and experimental investigations of ethanol diesel dual fuel combustion systems for a CI engine.* Anna.

8. Ramaiah, R. *Optimization of physical parameters of subsurface clay tile drains used in agriculture.* Bangalore. Dr. K. Ranga, Prof., Department of Civil Engineering, Bangalore University, Bangalore.

9. Sunil Kumar. *Chemical modification of some amorphous chalcogenide thin films.* IIT, Delhi. Prof. K.L. Chopra, Director, Indian Institute of Technology, Kharagpur and Prof. S.C. Kashyap, Centre for Materials Science and Technology, Indian Institute of Technology, New Delhi.

10. Venkateswarlu, Paladugu. *Studies on ionic mass transfer with coaxially placed discs on a rod as turbulence promoter.* Andhra.

Sanjay Gandhi Post Graduate Institute of Medical Sciences

POST BOX NO. 375, RAE BARELI ROAD, LUCKNOW-226 001

REQUIRES

LAST DATE : 15-10-1988

ADVT. No. : 38/88

FOR THE POSTS OF ASSOCIATE & ASSISTANT PROFESSORS

SPECIALITY

1. Anaesthesiology
2. Cardiology
3. Cardio-Vascular Surgery
4. Endocrinology
5. Gastroenterology Surgical
6. Neurology
7. Genetics
   - (a) Genetic Hematology
   - (b) Clinical Genetics
   - (c) Foetal Medicine
8. Neurosciences
   - (a) Neuro-ophthalmology
   - (b) Neuro-otology
   - (c) Physical Rehabilitation
9. Nuclear Medicine
10. Clinical Immunology
11. Radiology
12. Transfusion Medicine
13. Uroiogy

PAY-SCALES AND REQUIREMENT

Post	Pay-Scale (Pre-Revised) Medical	Pay-Scale (Pre-Revised) Non-Medical	Age ordinarily not more than	Experience (Post MD/MS)
Associate Professor	Rs. 2100-75-2625	Rs. 1600-60-2020	45 Yrs	7 Yrs. (Out of which 5 Yrs. should be of Assistant Professor).
Assistant Professor Grade-I	Rs. 1800-75-2100-100-2400	Rs 1300-60-1720	40 Yrs.	5 Yrs. (Preferably as Lecturer for 2 or more years).
Assistant Professor Grade-II	Rs. 1500-60-2040	Rs. 950-50-1600	35 Yrs.	3 Yrs.

Dearness and other allowances will be paid as per Institute rule. Rates admissible at present are at par with those at AIIMS, New Delhi.

QUALIFICATION AND EXPERIENCE

1. A Postgraduate qualification e.g. M.D./M.S./Ph.D. or a recognised qualification equivalent thereto, in parent branch of super-speciality.
2. A qualification in super-speciality such as D.M./M. Ch. or a recognised qualification equivalent thereto.

   OR

   A recognised training/experience in super-speciality of at least 5 years, where qualification in super-speciality is not yet prescribed. For appointment as Asstt. Prof. in the Grade of 1500-2040, three years training could be considered.
3. Teaching and/or research experience after prescribed postgraduate qualification in parent branch of the super-speciality, as detailed in table above.

GENERAL CONDITIONS

Pension/Gratuity and other benefits as per rules of the Institute. Additional increments and relaxation in age may be considered in deserving cases. Persons not qualifying for higher post may be offered lower post by downgrading the original post.

Applications on plain paper should reach the office of the undersigned latest by **15th October, 1988**. The applications of overseas candidates may reach in 6 weeks of this advertisement. Persons in employment should send their applications through proper channel. Advance copy may be sent but interview letters will not be issued without prior clearance of the current employers.

Please mention Advt. No. & Job Number and the post on top of application. Separate applications should be sent for each post and each speciality.

APPLICATION SHOULD INCLUDE

1. Qualifications with year of passing and marks.
2. Details of post MD/MS/Ph.D./Employment experience.
3. List of publications.
4. Names of 3 referees who are personally familiar with the work of the candidate, and
5. Reprints of five best papers.

The Director reserves the right to reject any or all applications without assigning any reason thereof. Incomplete applications are liable to be rejected.

NB : Revised pay scales will be admissible from the date of revisions at AIIMS, New Delhi.

Prof. B.B. Sethi
DIRECTOR

MINISTRY OF HUMAN RESOURCE DEVELOPMENT

(DEPARTMENT OF EDUCATION) ES. III SECTION

INDO US FELLOWSHIPS PROGRAMME : 1989-90

Applications on plain paper are invited from Indian nationals for the award of three (3) Fellowships altogether at pre-doctoral level in the U.S.A. during 1989-90 in the following fields :

1. Atmospheric Research; 2. Ocean Energy; 3. Satellite Imagery and Remote Sensing Engineering; 4. Fibre Optics and Electro Optics; and 5. Reliability Engineering/Analysis.

Qualifications : (i) Uniformly good academic record with 60% or above marks in Master's Degree in the subject or related field. (ii) Only those candidates who are already engaged in research work and are enrolled for the Doctorate Degree in the subject-field concerned with any University/Institute in India are eligible to apply. (The University/Institute concerned must certify that the candidate is permitted to continue his/her pre-doctoral research at a University/Institute in U.S.A.).

Age : Upto 33 years on 1-10-1988 (upper age limit relaxable in the case of Scheduled Caste/Scheduled Tribe candidates upto two years).

Duration : Upto One Year.

Value : (1) $ 1,000 per month for 12 months; (2) $ 750 one time professional allowance for books and travel; and (3) $ 3,200 tuition cost.

Passage : Passage cost bothways to be provided by the Government of India.

Note : (i) The following must be attached with the application : (a) Attested copy of the Certificate certifying the date of birth; (b) Attested copy of the marks sheet of the qualifying exam; and (c) Attested copies of all degrees/diplomas/certificates, etc. (ii) Where Grades are mentioned the candidate must indicate the conversion formula adopted by the University/Institution. (iii) Equivalent foreign degrees will be considered. (iv) Candidates, who have already been abroad for study/research/training either on a scholarship or on their own, are eligible to apply only if they have been in India for at least three years after return from abroad. Applications of candidates, who are abroad, will not be considered. (v) Age and experience may be relaxed maximum upto three months at the discretion of the Selection Committee in the case of exceptionally outstanding candidates. (vi) Master's Degree means M.A./M.Sc./M.Tech./M.E. but not M. Phil. or Pre-Ph D. (vii) Candidates should have adequate knowledge of geographical situation, culture & heritage of India and USA. (viii) Applications in subject-fields other than those prescribed will not be considered. (ix) Candidates who do not possess the requisite qualifications need not apply. (x) The application form should be accompanied by a crossed Postal Order of Rs. 5/- (Rs. 1.25 in case of Scheduled Caste/Scheduled Tribe and other backward classes) payable to the Secretary, Ministry of Human Resource Development (Deptt. of Education), New Delhi. (xi) Applications which do not contain postal order will be considered incomplete and will not be considered.

Candidates should apply for the above scholarship on a plain paper, furnishing details/particulars in the format given below **to the Secretary, Ministry of Human Resource Development (Department of Education), External Scholarships Division, ES.3 Section, Room No. 516, B-Wing, Shastri Bhavan, New Delhi-110001 by 5th October, 1988.**

Applications received late will not be entertained.

....FORMAT.....................................

Passport size Photograph to be pasted here.

1. Name of the Scholarship Scheme : Indo-US Fellowship
2. (a) Subject (b) Sub-subject :
3. Name of the candidate (in Block letters), with full mailing address :
4. Date of Birth and the State to which the candidate belongs :
5. Whether a member of SC/ST or a tribal or aboriginal community. If so give full particulars :
6. Academic record starting from High School/Hr. Secondary :

Name of the University/ Board/Institutions	Examination(s) passed	Year of passing	Division/Class with position, if any*	% of marks obtained. Postition, if any.	Subjects taken

* in case no Division/Class is awarded & only grading is done the conversion formula adopted may be obtained.

7. Details of Professional Practical Training & Research Experience, specifying the period and number of papers published, previous employment with name and date of employment, if any.
8. Nature of the present employment with date of appointment, designation and the name and address of the employers.
9. Have you been abroad ? If so, give full particulars of the country and the period; also, mention the year of return to India.
10. Proposed programme of study/research/training, specifying
    - (i) the work in which engaged at present (indicating date of Ph.D. registration and name of Institution).
    - (ii) nature and programme of study/research desired.
    - (iii) future plans/prospects after the proposed studies/research, and
    - (iv) how are these related to the technical or economic development of India ?
11. Crossed Postal Order of Rs. 5/- (Rs. 1.25 in case of SC/ST candidates, etc.) may be attached with the form with passport size photograph (one copy). (No. and date of Postal Order to be given)

Note : Employed persons must send their applications fully sponsored by the Employers. However, advance applications will be considered provisionally pending sponsorship by employers.

Place :

Date :

(Signature of Candidate)

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CLASSIFIED ADVERTISEMENTS

BANARAS HINDU UNIVERSITY

(Advertisement No. 2/1988-89)

Applications are invited for the undermentioned posts. The benefit of Provident Fund/ Pension, Dearness Allowance, House Rent Allowance and City Compensatory Allowances are admissible according to University rules. The retirement age of the University Employees for teaching posts is 60 years and 58 years for non-teaching posts unless otherwise revised. The appointment will be made on one year probation on all permanent posts. Higher starting salary within the grade is admissible to specially qualified and experienced candidates.

Applications will be entertained on the prescribed form duly supported with a Bank Draft/Indian Postal Order/Overseas Postal Order of Rs. 10/- (of Rs. 2.50 for the candidates belonging to Scheduled Caste/Scheduled Tribes category) in favour of the Registrar, BHU onwards application fee. Application form alongwith detailed qualifications will be supplied on receipt of crossed I.P.O./ Bank Draft of Rs. 2/- in favour of the Registrar, BHU and self-addressed envelope of 23 cm x 10 cm size carrying stamps of Rs. 2.60. The University will not defray the travelling or other expenses of candidates called for interview but shall contribute actual Railway fare by shortest route for second class plus reservation charge for sleeper and/or the actual Bus fare from the candidate's normal place of residence in the case of candidates called for interview. Candidates from outside India shall be entitled to actual Railway fare by shortest route for second class plus reservation charges for sleeper and/or actual Bus fare from the port of entry to the place of interview.

Application for each post be sent separately alongwith attested copies of certificates and marksheets in support of the qualifications and experience mentioned in the application and be addressed to the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005, India.

Incomplete application in any respect will not be entertained for consideration. Those who are in service should apply through proper channel. Money Order or Cheque will not be accepted towards application fee.

Reservation : (1) A reservation of 15% in the case of Scheduled Caste and 7½% in the case of Scheduled Tribes will be made in the category of teaching posts upto the level of lecturers only. (2) A reservation of 22½% (15% SC and 7½% ST) will be made in the category of non-teaching posts at entry level.

The last date for receipt of application in the Office of the Registrar (Selection Committee Section), Banaras Hindu University either by post or by **hand will be November 14, 1988.** Applications will be received by hand at the Counter from 10.30 hrs. to 14.30 hrs. on each working day till the last date. No application shall be entertained after the last date from external, in service employees and the candidates residing abroad.

Note :
1. For Lecturer's posts where no specialisation is stipulated the number of vacancies may increase by the time the Selection Committee meets to interview candidates.
2. Those who have already applied timely for the posts shown at serial numbers 1 to 3, 5 to 12, 14 to 23, 25, 26, 30, 33 to 41, 44, 45, 48, 49, 66, 68, 75, 79, 81, 82, 84 to 91, 103, 106, 108, 125, 128, 129, 134, 136 to 143, 149, 151, 156, 160 to 162, 168 to 170, 174, 176, 184, 186, 195 to 203 and 205 to 210 need not apply again but they will be considered according to the advertised qualifications. However, they may send 10 copies of their latest bio-data for consideration.

Grade: **Professor** : Rs. 4500-150-5700-200-7300 (N.P.A. as per rules to Medical Graduates appointed in the Institute of Medical Sciences.)

Reader : Rs. 3700-5700) N.P.A. as
Lecturer : Rs. 2200-75-) per rules to
2800-100-4000.) Medical Gra-
) duates appo-
) inted in the
) Instt. of Medi-
) cal Science.

Other Posts : As indicated against the posts.

INSTITUTE OF AGRICULTURAL SCIENCES

1. **Professor of Farm Engineering** : (Spl. in Soil & Water Conservation Engg.) (One) (Earlier Advt. Nos. 13/81-82, 6/83-84 & 3/85-86).

2. **Professor-cum - Chief Scientist :** (Agronomy/Soil Science/Agricultural Engg./Genetics & Plant Breeding) (One) (under All India Co-ordinated Research Project on Dryland Agriculture) (Earlier Advt. Nos. 10/83-84 and No. 5/85-86).

3. **Reader in Plant Physiology** : (One) (Earlier Advt. No. 10/85-86)

4. **Reader in Extension Education** : (Two)

5. **Reader in Agricultural Chemistry:** (One) (Earlier Advt. Nos. 3/84-85 and 1/1986-87).

6. **Lecturer in Plant Physiology** : (Spl. in Plant Biochemistry and Applied Plant Physiology) (Earlier Advt. Nos. 11/83-84 and No. 5/1985-86).

7. **Lecturer in Agronomy : (One)** (Earlier Advt. Nos. 3/84-85 and 1/86-87)

8. **Lecturer in Soil Sciences & Agricultural Chemistry:** (One) (Earlier Advt. Nos. 3/84-85 and 1/86-87).

9. **Lecturer in Entomology & Agricultural Zoology** : (One) (Earlier Advt. Nos. 3/84-85 and 1/86-87).

10. **Lecturer in Genetics & Plant Breeding** : (Two) (Earlier Advt. Nos. 3/84-85 and 1/86-87).

11. **Lecturer in Extension Education:** (One) (Earlier Advt. Nos. 3/84-85 and 1/86-87).

12. **Junior Agronomist** : (One) (Under All India Co-ordinated Research Project on Agro-Meteorology (in association with Dryland Project) (Earlier Advt. No. 4/85-86).

Grade : Rs. 700-40-1100-50-1600. (Pre-revised).

INSTITUTE OF TECHNOLOGY

13. **Professor of Applied Chemistry** (One)

14. **Professor of Coal Mining** (One) (Earlier Advt. No. 3/85-86)

15. **Professor of Mine Planning** (One) (under Special Assistance Programme) (Earlier Advt. No. 10/85-86)

16. Professor of Mining Engineering (Mine Environment) (One) (Earlier Advt. No. 10/85-86)

17. Professor of Pharmacology (One) (Earlier Advt. No. 1/86-87)

18. Professor of Mechanical Engg. (Turbo-Machinery) (One) (Earlier Advt. No. 3/85-86).

19. Professor of Chemical Engg. (Process Dynamics & Control) (Earlier Advt. No. 12/84-85 & 10/85-86).

20. Professor of Bio-Chemical Engg. (Spl. Enzyme Engg./Bio-conservation) (One) (School of Bio-chemical Engg.) Earlier Advt. No. 2/87-88).

21. Professor of Bio-Chemical Engg. (Spl. Waste Engg./Food Engg.) (One) (School of Bio-chemical Engg.) (Earlier Advt. No. 1/86-87).

22. Professor of Bio-Medical Engg. (Electronics/Bio-Instrumentation) (One) (School of Bio-medical Engg.) (Earlier Advt. No. 1/86-87).

23. Professor of Metallurgical Engg. (One) (Earlier Advt. No. 1/86-87).

24 Professor of Metallurgy (Physical Metallurgy) (One)

25. Principal Scientific Officer (One) (Centre for Research in Micro-wave Tubes—Dept. of Electronics Engg.) (Earlier Advt. No. 2/87-88).

Grade : Rs. 1500-60-1800-100-2000 (pre-revised)

26. Glass/Tube Technologist (One) (Centre for Research in Microwave Tubes—Dept. of Electronics Engg.) (Earlier Advt. No. 2/87-88.

Grade : Rs. 1500-60-1800-100-2000 (pre-revised)

27. Reader (Industrial Economics) (One)

28. Reader (Industrial Psychology) (One)

29. Reader (Philosophy) (One)

30. Reader in Ceramic Engg. (Cement Technology) (One) Earlier Advt. Nos. 12/84-85 and 2/87-88)

31. Reader in Ceramic Engg. (Glass Technology) (One)

32. Reader in Process Metallurgy (Ferrous Metallurgy) (One)

33. Reader in Metallurgy (Metal Fabrication) One) (Earlier Advt. Nos. 12/84-85 and 2/87-88)

34. Reader in Metal Mining & Surveying (One) (Earlier Advt. No. 10/85-86)

35. Reader in Chemical Engg. (Two) (Earlier Advt. No. 10/85-86)

36. Reader in Mechanical Engg. (Material Science) (One) (Earlier Advt. No. 3/85-86).

37. Reader in Mechanical Engg. (Industrial Engg.) (One) (Earlier Advt. Nos. 12/84-85, 2/85-86 and 5/85-86).

38. Reader in Bio-Chemical Engg. (Microbiological Engg. / Bio-reactor Analysis) (One) (School of Bio-chemical (Engg.) (Earlier Advt. No. 1/86-87).

39. Reader in Bio-Chemical Engg. (Spl. Waste Treatment / New Food/ Bio-fertilizers) (One) (School of Bio-chemical Engg.) (Earlier Advt. No. 1/86-87).

40. Reader in Bio-Medical Engg. Bio-material / Bio-mechanics) (Two) (School of Bio-medical Eng.) (Earlier Advt. No. 1/86-87).

41. Reader in Pharmacology (One) (Earlier Advt. No. 1/86-87)

42. Workshop Superintendent (Main Workshop) (One)

Grade : Rs. 1200-1900 (Pre-revised).

43. Deputy Librarian (One) (I.T.) Library)

Grade : Rs. 1200-1900 (Pre-revised)

44. Lecturer in Pharmaceutical Chemistry (One) (Earlier Advt. Nos. 3/84-85 and 1/86-87).

45. Lecturer in Bio-Medical Engg. (Spl. Bio-Control) (One) (Earlier Advt. No. 1/86-87) (School of Bio-medical Engg.)

46. Lecturer in Bio-Medical Engg. (Polymer/Bio-Statistics) (One) (School of Bio-Medical Engg.)

47. Lecturer in Chemical Engg. (Two)

48. Lecturer in Mining Engg. (Two) (Earlier Advt. Nos. 3/85-86 and 10/85-86)

49. Foreman (One) (Dept. of Chemical Engg.) (Earlier Advt. Nos. 8/79-80, 4/83-84, 9/84-85 and 9/85-86).

Grade : Rs. 700-1600 (Pre-revised).

INSTITUTE OF MEDICAL SCIENCES
(Faculty of Medicine)

50. Professor of Plastic Surgery : (Microvascular Surgery) (One)

51. Professor of Paediatric Surgery : (One)

52. Professor of Cardiothoracic Surgery : (One)

53. Professor of Urology (Kidney Transplantation) (One)

54. Professor of Surgery (Oncology) (One)

55. Professor of Otology (One)

56. Professor of Medicine (One)

57. Profossor of Medicine (Nephrology) (One)

58. Professor of Neurology (One)

59. Professor of Skin & V.D. (One)

60. Professor of Pathology (Cytology) (One)

61. Professor of Anaesthesiology (One)

62. Professor of Pharmacology (Neuropharmacology) (One)

63. Professor of Pharmacology (Indigenous Drugs) (One)

64. Professor of Pharmacology (One)

65. Professor of Dental Surgery (One)

66. Professor in the Centre of Experimental Medicine and Surgery (One) (Earlier Advt. No. 11/84-85 and 8/85-86)

67. Professor of Radiology (One)

68. Reader in Dental Surgery (One) (Earlier Advt. No. 1/86-87).

69. Reader in E.N.T. (One)

70. Reader in Surgery (Two)

71. Reader in General Medicine (One)

72. Reader in Skin & V.D. and Leprosy (One)

73. Reader in Orthopaedics (One)

74. Reader in Microbiology (One)

75. Reader in Microbiology (Clinical Microbiology) (One) (Earlier Advt. Nos. 11/84-85 and 8/85-86).

76. Reader in Pharmaceutical Chemistry (One)

77. Reader in Anatomy (One)

78. Reader in Anaesthesiology : (One)

79. Reader in Education : (temporary likely to continue till the Scheme exists) (One) (Under National Teachers' Training Centre) (Earlier Advt. Nos. 11/83-84 and 5/85-86).

80. Reader in Radiology (One)

81. Lecturer in Statistics & Demography (One) (Under Post-Partum Programme—Dept. of P.S.M.) (Earlier Advt. Nos. 9/84-85, 2/85-86 and 5/85-86).

82. Lecturer in Medicine (Neurology) (One) (Earlier Advt. Nos. 3/84-85 and 1/86-87).

83. Lecturer in Medicine (One)

84. Lecturer in Surgery (Neuro-Surgery) (One) (Earlier Advt. No. 10/85-86).

85. Lecturer in Surgery (Cardio-Thoracic Surgery) (One) (Earlier Advt. No. 10/85-86).

86. Lecturer in Microbiology (Two) (Earlier Advt. Nos. 3/84-85, 5/1985-86 and 1/86-87).

87. Lecturer in Pathology (Two) (Earlier Advt. No. 1/86-87)

88. Acoustic Engineer (One) (Dept. of E.N.T.) (Earlier Advt. Nos. 8/79-80, 11/81-82, 4/83-84, 3/84-85 and 9/85-86).

Grade : Rs. 1200-1900 (pre-revised)

89. Speech Therapist (One) (Dept. of E.N.T.) (Earlier Advt. Nos. 11/84-85 and 9/85-86).

Grade : Rs. 700-1600 (Pre-revised).

90. Instrumentation Engineer (One) (Under Special Assistance Programme – Dept. of Biochemistry) (Earlier Advt. Nos. 3/84-85 and 9/85-86).

Grade : Rs. 700-1600 (Pre-revised).

91. Assistant Librarian (One) (I.M.S. Library) (Earlier Advt. Nos. 3/83-84, 11/83-84 and 5/85-86).

Grade : Rs. 700-1600 (Pre-revised).

92. Junior Research Officer (One) (Centre of Experimental Medicine & Surgery).

Grade : Rs. 700-1600 (Pre-revised)

INSTITUTE OF MEDICAL SCIENCES
(Faculty of Ayurveda)

93. Professor of Basic Principles (One)

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95. Professor of Shalya Shalakya (One)

96. Professor of Rasa Shastra (One)

97. Reader in Kayachikitsa (One)

98. Reader in Basic Principles (One)

99. Reader in Shalakya (One)

100. Reader in Sangyaharan - Anaesthesiology (One)

101. Reader in Dravyaguna (One)

102. Lecturer in Basic Principles (One)

103. Lecturer in Rasa Shastra (One) (Earlier Advt. No. 5/85-86)

104. Lecturer in Kayachikitsa (Two)

105. Lecturer in Dravyaguna (One)

106. Statistical Officer (One) (Earlier Advt. Nos. 11/83-84 and 5/85-86)

Grade : Rs. 700-1600. (Pre-revised).

S.S. HOSPITAL

107. Chief Administrative Officer (One)

Grade : Rs. 1200-1900 (Pre-revised).

108. Bio-Engineer/Electronics Engineer (One) (Earlier Advt. No. 1/86-87)

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112. **Principal (For ladies only)** ne)

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114. **Professor of Home Science** Iome Management) (One) (Department f Home Science).

115. **Reader in Physics (One)**

116. **Reader in Political Science** One)

117. **Lecturer in German (One)**

118. **Lecturer in French (One)**

119. **Lecturer in English (One)** reserved for S.C. candidates)

120. **Lecturer in History of Arts** One)

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122. **Lecturer in Home Science** Two—one in Child Development and one in Clothing Textiles) (Department of Home Science)

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124. **Lecturer in Geography (One)** reserved for S.C. candidates)

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128. **Lecturer in Painting (One)** (Earlier Advt. No 3/85-86)

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Applications are invited from retired college teachers in subjects : Education, Physical Education, Commerce, Economics, History, Marathi, Hindi, English. Age not be more than 65 years. He should be a recognised Ph.D. Guide. Terms and conditions will be as per Rules of University Grants Commission. Bio-data should reach before **5 October, 1988.**

Dr. C.B. Shitole
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College of Education, BARSI
(Research and Training)

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Applications on prescribed form are invited from the Indian citizens for the following faculty and other positions, **upto 31-10-88.** Persons employed in Government, Semi-Govt. and Educational Institutions should apply through proper channel. The posts carry allowances such as DA, CCA, rent free accommodation, special compensatory allowance etc. as are admissible to Central Government employees stationed at Itanagar from time to time Depending on the qualifications and experience, a higher salary may be offered. Also a candidate not found suitable for the post he/she has applied may be considered for a lower post. Pay-scale and upper age limit immediately follow the name of each post.

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Candidates not possessing Ph.D. may also be considered if they have to their credit equivalent published research work or design and development work of high standard either in an Institution or in any Industry.

2. **Assistant Professors/Lecturers** : (i) Civil (ii) Mechanical (iii) Electrical (iv) Electronics/Telecommunications (v) Computer Science/Engineering (vi) Agriculture Engineering (vii) Horticulture (viii) Forestry (ix) Life Sciences (x) Chemistry (xi) Physics (xii) Mathematics (xiii) Economics (xiv) English.

Assistant Professors : Rs. 1200-50-1300-60-1900/- p.m. (Pre-revised), 45 years; **EQ** : A consistently good academic record with a Doctorate in the relevant field. About 5 years experience in teaching and/or research and development. Candidate not possessing Ph D. may also be considered if they have to their credit equivalent published work of high standard either in an Institution or in an Industry.

Lecturer : **Rs.** 700-40-900-EB-40-1100-50-1250-EB-50-1600/- p.m. (Pre-revised), 40 years; **EQ** : A consistently good academic record with Doctorate degree in relevant field of Applied Science or in Economics/English or a Master's Degree in appropriate field of Engineering/Technology. About one year experience in teaching/research/industry. Candidates not possessing Ph.D. may be considered if they have to their credit equivalent published work of high standard.

3. **Institute Engineer** : Rs. 1500-60-1800-100-2000/- p.m. (Pre-revised), 45 years; **EQ**: Degree in Civil Engineering with 7 years experience in co-ordination and supervision of Construction & Maintenance of Civil including public health works in the capacity of an Executive Engineer or equivalent in Public Works Department or an organisation of repute. The duties, responsibilities and powers of the incumbent will be the same as that of a Superintending Engineer in the C.P.W.D. The incumbent will be the Estate Officer of the Institute.

4. **Assistant Resident Engineer** : (i) Civil (ii) Electrical Rs 2200-75-2800-EB-100-4000/- p m. (Revised), 40 years; **EQ** : Graduate in (i) Civil Engineering (ii) Electrical Engineering with minimum experience of 3 years or Diploma holder with a minimum experience of 8 years in (i) Civil Engineering (ii) Electrical Engineering. Candidates should have experience in (i) construction and Maintenance and Civil works (ii) Work relating to PWD, MES, Railways, Electricity Board.

5. **Security Officer** : 2200-75-2800-EB-100-4000/- pm (Revised), 40 years; **EQ** : Matriculate preferably Graduate, with experience as Officer in Military/N.C.C./Para Military organisations/police or Security Organisations and well conversant with Security procedure and liaison with police.

6. **Physical Education Instructor** : Rs.2200-75-2800-EB-100-4000/- p.m. (Revised), 30 years; **EQ** : Bachelor's Degree in Physical education with 5 years experience in a teaching institute organising sports; participation in international events will be desirable.

7. **Public Relations Officer** : Rs. 2200-75-2800-EB-100-4000/-p.m. (Revised), 40 years; **EQ** : (i) A Bachelor's Degree in Arts/Science, Commerce or any branch of Engineering/Technology (ii) Diploma in journalism from a Government approved institution (iii) At least three years working experience in public relations/publicity and institutional liaisioning preferably in a University or or other government institution.

8. **Foreman** (i) Automobile (ii) Electrical (iii) Mechanical—Rs. 1640-60-2600-EB-75-2900/- p.m. (Revised); 35 years; **EQ** : Diploma in (i) Automobile (ii) Electrical (iii) Mechanical Engineering with 3 years of relevant work experience in a workshop or educational institute of repute.

9. **Assistant Librarian** : Rs. 1640-60-2600-EB-75-2900/- p.m. (Revised), 30 years; **EQ** : (i) Graduate in Arts/Science or Commerce from a recognised University (ii) Diploma in Library Science from a recognised University or Institution (iii) Working experience in any library.

10. **Junior Engineer** (i) Civil (ii) Electrical — Rs. 1400-40-1600-50-2300-EB-60-2600/- p.m. (Revised). 30 years, **EQ** : Diploma in (i) Civil Engineering (ii) Electrical Engineering or Certificate holder in (i) Civil Engineering with 2 years experience in construction of building/maintenance (ii) Electrical Engineering with 2 years experience in electrical installation / maintenance capacity to handle labour at works.

11. Supervisor Horticulture: Rs. 1400-40-1800-EB-50-2300/- p.m. (Revised), 40 years; EQ : B.Sc. in Agriculture science with specialisation in Horticulture and 3 years experience in Horticulture/Forestry in a reputed Government Agency or Hotel.

12. Senior Technician / Workshop Instructor (i) Civil (ii) Mechanical (iii) Electrical (iv) Electronics (v) Computer Science (vi) Carpentry workshop. Rs. 1400-40-1800-EB-50-2300/- p.m. (Revised) 35 years; EQ : A National Certificate in Appropriate trade with CTI regular training or NCTVT certificate with 3 years experience in case of trade certificate holders and 2 years experience in case of CTI trained persons in a reputed workshop/Technical Institution.

13. Laboratory Assistant (i) Chemistry (ii) Physics (iii) Horticulture Rs. 1400-40-1800-EB-50-2300/- p.m. (Revised), 30 years; EQ : B.Sc. (Hons) in the respective field with at least 2 years experience in laboratory or teaching in reputed Institution.

14. Sanitary Inspector : Rs. 1400-40-1800-EB-50-2300/- p.m. (Revised), 30 years; EQ : B.Sc. from recognised University with Certificate in Sanitary Inspector course from recognised Institution. Preferably with some campus or Institution experience in maintenance hygiene and sanitation.

15. Stenographer Grade. II Rs. 1400-40-1800-EB-50-2300/p.m. (Revised) 30 years; EQ : Degree in Science/Commerce/Arts from a recognised University. Must possess stenography speed of 120 WPM and Typing speed of 40 words per minute. Preference will be given to those candidates having the above qualification and working experience as personal Staff under Senior Officers for more than 3 years.

16. Technician (i) Civil (ii) Mechanical (iii) Electrical (iv) Electronics (v) Computer Science (vi) Carpentry workshop & fitting shop. Rs. 1200-30-1560-EB-40-2040/- p.m. (Revised), 30 years; EQ : National Certificate in appropriate trade with atleast two years experience in a reputed workshop or Technical Institution.

For the application forms write to Deputy Registrar (Administration) NERIST, Naharlagun-791 110, Arunachal Pradesh with a fee in crossed Indian Postal Order for Rs. 7.50 payable to Director, NRIST, Naharlagun (Rs. 2.50 for SC/ST candidates). Candidates from abroad may apply on plain paper.

Age and experience is relaxable as per the prescribed norms in the case of SC/ST and other exceptional cases.

Applications completed in all respects along with attested/photo copies of the Certificate/Testimonials should reach Deputy Registrar on the above address on or before **31-10-88** by registered post only. Incomplete application and application received late will not be considered.

P.G. Nair
DEPUTY REGISTRAR
(Administration)

UNIVERSITY OF KALYANI
KALYANI, WEST BENGAL-741235

Advt. No. 4/88 **Dated : 12.9.88**

Applications in prescribed form are invited for the undermentioned posts in the scale mentioned below with allowances as admissible under the University rules.

(1) Dean of Students' Welfare—One Post.

Age not below 40 years. Relaxable in the case of exceptionally qualified candidates.

(2) Deputy Registrar—One Post.

Age not below 35 years. Relaxable in the case of exceptionally qualified candidates.

Scale of Pay: Dean of Students' Welfare: Rs. 1500-60-1800-100-2000-125-2500/-. Deputy Registrar—Rs. 1200-50-1300-60-1900/-.

Those who had applied previously in prescribed form for the above posts need not apply again. They may, however, update their bio-data.

(3) Research Associate—One Pots (Purely temporary, extendable upto three years) under the Research Project of Professor K.R. Samaddar, Professor of Botany and Principal Investigator of the Project Proposal entitled "Identity relative frequency epidemiology and Central of the Block leaf spot pathogen of oilseed brassica", sanctioned by I.C.A.R.

Rs. 1600/- (fixed) p.m. Age Preferably below 40 years.

Qualifications : (a) Essential: Good academic record with Honours in Botany followed by first or second class (minimum 50% marks) Master's Degree in Botany with specialisation in Mycology & Plant Pathology. Two years experience of active research in biochemical aspects of plant pathology and knowledge of tissue culture of Brassicas. (b) Desirable: Ph.D. and/or published work of equivalent merit preferred.

The principle of reservation of posts for the candidates belonging to scheduled castes and scheduled tribes shall be followed to the extent possible as per orders issue by the State Govt. from time to time.

A circular containing details of qualifications, pay and allowances and other relevant information may be had from the office of the undersigned from 20-9-88 to 11-10-88 between 11-30 a.m. and 3 p.m. on working days separately or alongwith the application form on payment of Rs. 7-50 (charge one-fourth for SC/ST candidates) by current Crossed Indian Postal Order in favour of 'the University of Kalyani' personally or by sending a self-addressed stamped (Rs. 1-80) envelope (25 c.m. x 12 c.m.). Application forms complete in all respects according to the instructions given in the circular must reach the office of the undersigned on or before **11-10-88**.

SC/ST candidates must produce documents of caste from the appropriate authority (S.D.O.) at the time of collecting forms.

No TA is admissible for attending the interview.

P. Sircar
REGISTRAR

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University News

31st

MONDAY, OCTOBER 17, 1988 Rs. 2.50

Management by Objectives and University Administration

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Distance Education

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INFOTEK National Conference

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Applications are invited on plain paper for the post of :

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Humanities (English), Health Education, Extension Services, Conditioning, Athletics, Gymnastics, and Natural Sciences.

(*Medical Officer-cum-Lecturer in Anatomy and Physiology)

(Scale : 2200-75-2800- 100-4000).

Qualifications

Essential

(a) A Doctorate Degree or research work of an equally high standard, and

(b) Good academic record with at least second class (C in the seven point scale) Master's degree in Physical Education from an Indian University or an equivalent degree from a foreign University.

Desirable

(a) Diploma in specialisation in coaching a game or sport from a recognised institution.

(b) Participation at Inter-university or Inter-state sports competition.

Provided that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing good academic record (weightage being given to M. Phil degree or equivalent degree or research work of quality) may be appointed on the condition that he/she will have to obtain a Doctor's/M.Phil degree or give evidence of research of high standard within 14 years or till he/she reaches the stage of Rs. 3400/- in the pay scale whichever is earlier, from the date of his/her appointment failing which he/she will not be able to earn future increments until he/she fulfils these requirements.

***Medical Officer**

M.B.B.S. Degree from a recognised University. 3 years experience after passing M.B.B.S. required. Candidates with postgraduate qualifications or hospital experience will be preferred.

2. Librarian : (Rs. 2200-4000)

Qualification

1. Good academic record with at least a high second class Master's degree in a subject other than Library Science.
2. Master's degree in Library Science with first or high second class.

The applications must reach the Principal, Indira Gandhi Institute of Physical Education and Sports Sciences, No. 2 Ludlow Castle Sports Complex, Sham Nath Marg, Delhi-54, upto **October 31, 1988.**

Dr. J.S. Naruka
OFFICER ON SPECIAL DUTY (PRINCIPAL)

31 [illegible]
C.F.T.R.I., MYSORE

UNIVERSITY NEWS

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

MANAGEMENT EDUCATION
Some Policy Issues

B. B. Tandon*

Management education is a highly visible target. It has been roundly criticized, some valid, others born out of ignorance.

Management education courses in India started in 1960s and there are over eighty universities and institutes which offer management education. Besides these, there are a number of "teaching shops" which offer some diploma or degree in management education.

There are a number of policy issues which now need to be considered, and possible changes brought about. These issues are :

(1) Most of the concepts and techniques in management have been developed in the U.S.A. There is nothing wrong in adopting these concepts but these have to be modified keeping in view the Indian environment. In U.S.A. most of the industries and services including public utilities are in the private sector. Most of the Management concepts have been developed for this sector. But, in India the public sector is predominant. The public sector has a different work environment, a different planning and control process and a different decision making process. Hence, the concepts relevant for private sector need to be suitably adapted. There is need to introduce management culture in Administrative Staff Colleges, Railway Staff College, Research Institutes, e.g., CSIR, ICAR, and services like banking and health.

Most of the MBAs passing out compete for the jobs in the private sector which offers only about 15 per cent of the job opportunities.

(2) There are different levels in management education. These are :

(a) Continuing Education
(b) Management Research
(c) Cross Functional
(d) Functional Management
(e) Operating and Shop Floor Activities.

Besides these levels, management education would also include an input of liberal arts and quantitative methods. We should be very clear with regard to the target level or the level for which management education is imparted. From experience and interaction with the Alumni of the Department it seems that immediately after passing out, the MBAs are expected to work and know about operating and shop floor activities. Examples are documentation, actual selling, accounts, labour laws, etc. After about two decades most of the MBAs have reached a level of Functional Heads. Thus there need not be undue emphasis on cross-functional subjects. Functional management needs to be strengthened

(Continued on page 7)

[Based on a paper presented at the National Conference on Policy Implications in Management Education, held on April 28-30, 1988 at Indian Institute of Management, Bangalore.]

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Management by Objectives and University Administration

Sanjay Kaptan*

Broadly speaking, Management By Objectives (MBO) means management of an organisation constantly keeping in view its objectives. It implies that every step has to be governed by the objectives of the organisation.

Of course, the top management of most organisations have been carrying out this process intuitively in the past. But it is only recently that this has been developed and successfully used as an effective management technique.

The term MBO was popularised by Peter F. Drucker, a consultant, prolific writer and professor of management who stated that "Objectives are needed in every area where performance and results directly and vitally affect the survival and prosperity of business. He emphasised the importance of participative goal setting, self control and self evaluation stating that "Management by Objectives and self control may legitimately be called a philosophy of management." It rests on a concept of the job of management. It rests on an analysis of the specific needs of the management group and the obstacles it faces. It rests on a concept of human action behaviour and motivation. Finally, it applies to every manager, whatever his level and function and to any organisation whether small and large. It ensures performance by converting objective needs into personal gains and this is genuine freedom.

Definition

Management By Objectives has been defined in different ways. One of the most frequently quoted definitions is by George S. Odiorne, who describes MBO as "A process whereby the superior and subordinate managers of an organisation jointly identify its common goals, define each individual's major areas of responsibility in terms of the results expected of him/her, and use these measures as guides for operating the unit and assessing the contribution of each of its members."

John W. Humble, a consultant in England and author of several MBO books, defines MBO as "A dynamic system which seeks to integrate the company's need to clarify and achieve its profits and goals with the manager's need to contribute and develop himself."

Since MBO can also be used to non-profit organisations like hospitals, universities, educational and other charitable institutions one probably should change the word 'profit' to 'surpuls' since it is the aim of all managers, whether they work in business, government, or non-profit organisations, to create surplus value in which the value of all output is greater than the value of all inputs. From this point of view, MBO for a non-profit organisation, like educational institution, can be defined as

"A comprehensive managerial system that integrates many key managerial activities in a systematic manner consciously directed towards the effective and efficient (that is being productive) achievement of organisational and individual objectives."

MBO In Educational Institutions

A number of research projects have been undertaken exploring the applicability of MBO technique in universities and other big institutions. There have been publications in the US demonstrating applications of MBO in schools and for teachers and educational institutions by Lewis and Mc Ashan. In the words of Ashan, "the specific goals or objectives deriving from goal statements (KRAs) for educational institution need to be phrased in the shape of observable outcomes of performance behaviour arising out of instructions. The absence of an evaluation performance statement is all that prevents the goal from being considered a performance objective. This echos the same idea as in MBO that as far as possible measurable criteria are always necessary for the formulation of objectives."

There is another reason why techniques like MBO should be applied in educational institutions. There is a huge and broad based growth of educational institutions in India. Universities with 70,000 to 80,000 enrolled students and nearly one hundred teaching colleges/departments are familiar to us. There is no

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surprise when we come across an educational society with nearly 50-60 affiliated institutions. In many cases, these institutes and colleges are located at different places. Thus, the scope of university activities is increasing every day. The university has to manage its own teaching departments, affiliated colleges, provide assistance in research, extension education and conducting examination as well as other educational activities. Therefore, it becomes necessary to apply modern management techniques for effective and efficient management of organisations like universities. The functions of a modern university are manifold such as examinations, enrolement, administration of various courses, academic planning and development, teachers and faculty development, research, students and social welfare and management of its own staff as well. This variety of tasks needs a proper coordination in order to improve efficiency and efficacy of university administration. This improvement in efficiency of university services will satisfy all the factors related to university administration, viz., students, staff, teachers, parents and society. These segments will get what they need at the right time in the best possible way. This implies arrangement of university functions in a proper hierarchy from the urgent to ordinary. An argument is also made that principles and techniques of management are applicable to business houses where profit is the basic motive of running an activity. This sort of thinking is erroneous. Management as a technique is not only related with earning profit but improving efficiency and bringing dynamism in the activities of an organisation. It helps to plan, coordinate, direct and control various functions in order to give the best possible results by using limited resources. From this point of view, management science and techniques of management like MBO are certainly very useful for university administration. Universities are already facing problems of deficits, overburdened activities and limitations of staff and resources. In such a situation, technique like MBO is of great use to overcome the crisis.

Introducing MBO

The introduction of MBO in an enterprise would entail the following :

- (i) Familiarising all levels of managers with the aim, scope and potentiality of the concept and practice of MBO ;
- (ii) Identification of Key Result Aareas for corporate improvement, as a sound basis for the ensuing step ;
- (iii) Establishing objectives, both long-term and short-term, for the organisation as a whole;
- (iv) Evolving long-range and shor-term plans to meet the objectives ;
- (v) Establishing, by discussion and agreement, the long-term and short-term objectives and priorities of tasks of each manager for the total fulfilment of organisation's objectives ;
- (vi) Periodic self-evaluation, review by seniors of the extent to which the actual achievements measure upto the prescribed objectives, and taking corrective action ;
- (vii) Counselling and guidance by the immediate senior not only for overcoming deficiencies but also for encouraging proven strengths.

MBO is a result centered, non-specialist, participative and operational managerial process for the effective utilization of all resources, contributing to the integration of the individual with the organisation, and of the organisation with the environment.

Although MBO as a whole is an approach, its practice and implementation need a particular technique with sharply defined steps. The spiritual approach to a man's life becomes meaningful only when certain disciplines and techniques are followed with zeal, Otherwise, spiritualism is an eyewash. So it is with MBO. To give shape to the MBO approach, the 'Key Results Analysis Technique' (KRAT) has been used by us. In all our MBO assignments, we stress that the KRAT is the spinal cord of the MBO system. Hence the need to carefully assimilate it.

The stepwise elaboration of KRAT is as follows :

1. Purpose (sometimes called 'mission')
2. Key Result Areas
3. Objectives
4. Action Plan
5. Control Information
6. Authority Limits.

The six step sequence of KRAT is applicable to any frame of reference. That is, it applies as much to the whole organisation as a single entity, as to a department or division or branch of it, or ultimately to a single individual. It is applicable to the management of a state by its Council of Ministers with equal force. A trade union could also seek systematic management of its affairs through the sequential KRAT mentioned above.

(1) *Purpose*: Purpose is a quintessential statement of what the organisation stands for. It is the distilled expression of an organisation's basic conviction of what it wants to be.

(2) *Key Result Areas:* Key Result Areas (KRAs) constitute an amplification of the 'purpose' in terms of certain major areas of organisational performance where attention and emphasis for improvement or change have to be devoted on a priority basis. It is in KRAs also that the result centredness of MBO finds its first explicit opening. The following features in the phase of KRAs identification are important.

(a) KRAs have a shorter time perspective than the 'purpose'. They are usually of a one-year time span. This is so because KRAs have to be more responsive to changing times whereas the 'purpose' is a much more enduring testament of the organisation's *raison d'etre* which it strives to fulfil despite the many ebbs and flows of a cyclical or transient nature.

(b) KRAs, in our view, are best derived from a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of the organisation, or its divisions, or departments as the case may be. In practice, we normally find that 'weaknesses', 'opportunities', and 'threats' provide the principal sources of KRAs. It should stand to reason that what is of major or key significance is dependent on which weaknesses that have to be got over, what opportunities that need to be exploited, and what threats that need to be combated.

(c) KRAs ought to be expressed, as far as possible, in a positive language, and not be phrased negatively or in terms of activities.

(*3*) *Objectives* : 'Objectives' have a definite connotation in the context of MBO. Here, we do not mix up objectives with aim, mission, goal, purpose and the like, as is done in common language. The word 'objective' is not interchangeable with the other words. The following points are significant for this step in the KRAT sequence :

(a) Time dimension
(b) Measurement dimension
(c) Cost dimension
(d) Quality dimension

(*4*) *Action Plan* : Action plans delineate for each objective the steps to be taken and means to be employed for accomplishing it. The action plan should concentrate on the 'how' part. Action planning for 'qualitative' or 'personal' objectives is equally necessary, although it may be somewhat less well defined because of the very nature of the objective.

(5) Control Information: This step is concerned with supplying interim feedback to a job holder about his progress on various time bound objectives, for himself. This information should not be confused with data needs at the time of setting objectives. First, the frequency of control information will depend on the nature and time limit set for the objective. In other words, it appears that every job holder will have certain self-generated control information with himself, while the rest has to be properly organised from other points of origin.

(*6*) *Limits of Authority* : One of the objectives of MBO is to facilitate greater delegation by superiors to subordinates. Agreed objectives provide the basis for negotiation of delegated authority limits on a flexible basis. Authority needs could be of following types :

(a) To call upon certain specialist manpower resources inside or outside the organisation.
(b) To make use of certain technical services.
(c) To incur money expenditure.
(d) To reallocate duties amongst employees below.
(e) To visit or write to certain authorities or governmental agencies, and so on.

Key Result Involvement Matrix (KRIM)

Although the ultimate stage in MBO implementation is to have the purpose, KRAs and objectives of each individual manager (officer in case of a university) clearly laid out, it is important to appreciate that the individual in an organisation operates always among and with other people at peer, superior, and subordinate levels. Unless, therefore, his KRAs and objectives mesh with those of other roles which feed on and into him, the process of MBO will lack cohesion and single pointedness. Hence, there is a necessity for a composite group KRA and objective setting exercise popularly known as KRIM i.e. Key Result Involvement Matrix.

KRIM is a process that decides what an individual contributes and relative involvement of various roles in each KRA. This helps in understanding of key roles for different tasks, and setting of subsequent distinctive yet mutually supportive objectives of managers involved.

During the process of group working for arriving at an agreed list of KRAs to draft a KRIM document the following guidelines are adopted :

1. The KRAs derived are checked in their penultimate stage, with respect to consistency with the purpose of the concerned reference point (the department or the section, or the university as a whole).
2. Agreement has to be by consensus. All the members/officers involved in achieving a task or objective should support it whole heartedly.
3. If needed an external consultant or expert, be invited to analyse the problm and decide the proper course of action.
4. A final list of all such objectives and KRAs be made in the order of priority.

(5) The result is a key result involvement matrix (KRIM) document for each individual officer and a master KRIM for the department can be prepared.

(6) Observation of work in organisations has led to conceptualise that there are three universally recognisable degrees of involvement intensity of people in KRAs or any other description of work.

   (a) A—Standing for accountability for a KRA.
   (b) B—Standing for 'major contribution' to a KRA.
   (c) C—Standing for consultation in a KRA or for showing initiative in a KRA, but then leaving it to others for 'A' or 'B' roles, all in all, a more passive role. Some officers/departments may have neither 'A' nor 'B' or 'C' involvement i.e. get a blank for certain KRAs in the view of certain group members: This concept of role involvement differential is carefully communicated to the group.

For a given KRA, only one role can have 'A' whoever it is. Multiple B's or C's or blanks are however possible for a given KRA. The common test to be applied to locate that 'A', involvement role for KRA, is to ask where the substantive core of the KRA is going to be accomplished ?

Each group member should consciously attempt in his distribution of As, Bs, & Cs to various roles to project what in his view ought to be the desired pattern of mutual involvement. His KRIM may not merely mirror the existing pattern which could be lopsided, or defective according to his understanding.

Each group member must know for a period his commitment pattern as also those of his peers and superiors. This role specificity is achieved in an ongoing manner.

The role of the Officers/Registrars/V.C., group leader in the proccss of consensus building becomes quite important. If his group behaviour appears to be non-conductive to open and frank airing of views and counterviews regarding A,B,C pattern for various KRAs and various members (including himself), some special efforts for making him aware of and sensitive to more positive in group behavioural role may be necessary.

To illustrate how KRIM can be applied in a university set up, a chart is given here. This chart is a sort of example and has many limitations. But it offers how the process of KRIM can be effectively and meaningfully applied to such a context. One may not agree with the involvement pattern in the chart. Similarly, the role differentiation adopted here may not be a typical one, nor relevant in all cases. Given these limitations, it serves to indicate the relevance of MBO methodology to the university type of organisation. □

KRIM For a University

Roles	KRAs Organisation Structure	Administration & Activity	Academic Planning	Adult Education, Students' Welfare, NSS	Exams.	Students' Participation	General Administration Maintenance
(1) Vice-Chancellor	A	A	A	A	A	A	A
(2) Registrar	B	B	B	B	B	B	A
(3) Finance Officer	B	—	—	C	C	—	B
(4) Controller of Examinations (Deputy Registrar)	B	B	B	—	B	—	—
(5) Heads of academic group	C	B	B	C	C	C	—
(6) Director of Students & Social Welfare	C	C	—	B	—	B	C
(7) Deputy Registrar (Academic)	B	A	B	—	C	C	C
(8) Astt. Registrar (General Admn.)	B	C	C	C	C	C	B
(9) Astt. Registrar (Confedential)	C	C	C	—	B	—	C

Distance Education and Free Student Choice

B. P. Parashar*

A nation's higher eduction system can be structured on two principles : the 'manpower principle' where education is planned and rationed to meet the needs of economy and the "free choice principle" to conform to the socio-political objectives of democracy and egalitarianism. Both the principles have equal relevance and in the overall educational enterprise both must be catered to. In this article we point out that while conventional university education can cater to the manpower needs, the distance education system is germane to the free-choice principle.

Education—A Social Function

The English word education is derived from the Latin "educare", itself related to the verb "educe" which according to the Oxford dictionary means "to bring out, to develop from latent or potential existence". For education to take place there must be "communication", which also is derived from the Latin word "comunicare" meaning "to make common". This implies that for an educational transaction to occur, atleast two presons are involved—a learner and a teacher. A teacher may teach in many different formats. In a classroom situation, a teacher teaches students face-to-face. In a hospital, a nurse teaches an expectant mother when she tells the latter about the prenatal precautions to be taken, An author of a book teaches in a non-contiguous mode when the contents of his book are internalised by the reader. The environment acts as teacher when experience effects learning. In this sense education is intrinsically a social function.

For more than 2500 years education has been a one—many function—a single teacher teaching a plurality of students. A revolution is now taking place wherein education has become a many-one function—a plurality of teachers providing individualised instruction to a single student as in the telematic mode of open universities.

Individually and collectively, education

- provides and creates new knowledge, skills, ideas and concepts,
- promotes effective ways of thinking and reasoning,
- creates social awareness and unselfish outlook,
- develops appreciation of art, music, literature,
- develops improved health and interests,
- inculcates spiritual and moral values.

As a social function education displays a dual role : it is an instrument of social change and itself reflects the existing social reality. It can change the course of the social dynamics and also can adapt itself to meet the needs of society. As an instrument of change, education is a dynamic process, taking place all through life. In its second role education has to be planned and the manpower needs have to be assessed. In the first role education is a process, in the second it is a product—a fixed body of content or a fixed trained manpower.

Manpower Principle

Educational infrastructure must be geared to produce the right number of persons for various vocations and professions. As the economy evolves, it will need certain inventories of trained personnel both for short term and long-term purposes. These requirements can be predicted and education at various levels geared to meet them. Distortions in social cohesion may occur when there is a mismatch between the supply and demand of specifically trained manpower. For example, in our country we cannot provide as many white-collar jobs as we produce arts and commerce graduates. Subject-based liberal education is required to humanise the human mind; but we connot ignore the ill-effects of the ever-increasing number of unemployed graduates.

Elitism and structural rigidity in education are consequences of the manpower principle. Another consequence is that even when the need for a particular training is reduced, the infrastructure has to be maintained at any cost. Further, there is a brain drain and what is intended to be a national asset has to seek an international market.

Free Choice Principle

We should support an education system which meets the economic needs and also from the moral point of view upholds individual freedom. Such a system has to be based on the principle of free student

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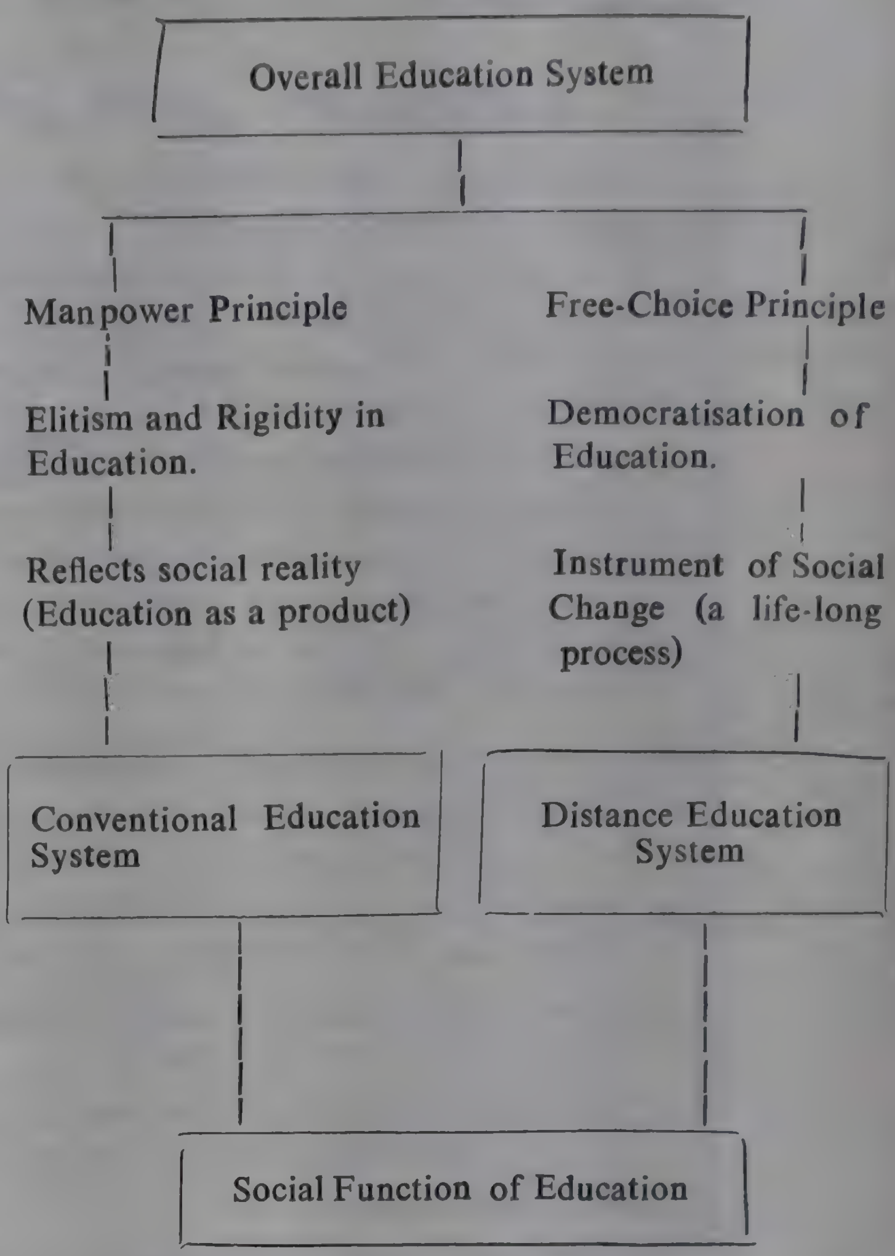
choice. The system would accommodate students not only in the age groups of conventional education, but also provide a second chance to those who for some reason were deprived of desired education in their youthful days or who may want additional education in mid-career. Such a system would be resilient enough to adjust the availability of places in its various programmes to match student choices and not in response to dubious bureaucratic market projections. The decision about the marketability of education obtained through free choice should be left to the perception of the clientele.

The free choice principle ensures democratisation by promoting life long education and allowing free play of indiuidual talents and interests. Even while catering to the fashion and fad of the clientele, it can to some extent, cope with market opportunities. Distance education system as practised by the open universities stands out as the ideal candidate conforming to the free choice principle.

Conclusion

We can conclude that while conventional education should stress the manpower principle, the distance education system should cater to the free student choice principle. It is in this sense that the complementarity and organic relationship of the conventional and distance education systems must be grasped.

The following chart exhibits this relationship :


Overall Education System
Manpower Principle
Free-Choice Principle
Elitism and Rigidity in Education.
Democratisation of Education.
Reflects social reality (Education as a product)
Instrument of Social Change (a life-long process)
Conventional Education System
Distance Education System
Social Function of Education

MANAGEMENT EDUCATION

(*Continued from page 1*)

and made more rigorous. It may be mentioned that management education is much less demanding and rigorous as compared to medicine or engineering.

3. As is true of all professional schools in the university, the work of business management department is shaped by their dual role as academic and professional institutions. Their work is judged by two sets of criteria—one set by the university the other by management practitioners. The university or academics want that management department should meet the scholarly standards of the university, whereas practitioners put highest value on competence that is demonstrably relevant to practice. The business management departments face a dilemma—whether they should adopt the academic model or the professional model, or what mix of the two should be there.

Further the faculty in business management departments are trained for the academic model, but we train our students on the basis of the professional model

4. The curriculum in business management departments does not prepare students in entrepreneurship. Expectations were that MBAs would set up their own small scale units. It has also been noticed that students lack general awareness about the corporate world and the international environment in general.

5. There is a need to set up a professional body on the lines of Indian Council for Medical Research (ICMR) which can bring about uniformity in course curriculum and admission procedure. Also such a body can give accreditation to business schools on the lines of American Assembly of Collegiate Schools of Business (AACSB). This would avoid the mushroom growth of business management departments.

6. The self-centered unloyal, aggressive impatient attitudes of MBAs need to be taken care of. Their work ethics need to be improved. ☐

GATE 89

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GATE is a mandatory qualification for self-financing foreign students and children of Indians including non-resident Indians, who hold non-Indian Passports but have obtained their qualifying degrees from Indian Institutions/Universities for the admission to post graduate courses. Admission of such candidates will be subject to Government of India clearance and they will not be entitled for scholarship.

THE FOLLOWING ARE ELIGIBLE TO APPEAR AT GATE

a) Bachelor's degree holders in Engineering/Technology/Pharmacy/Architecture and those who are presently in the final year of one such programme.

b) Those who have already obtained by examination professional qualifications (such as AMIE) recognised by UPSC as equivalent to B.Tech./B.E.

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Last date for receipt of completed application forms	**30 NOVEMBER, 1988**
DATE OF EXAMINATION	**SUNDAY, 12 FEBRUARY, 1989**

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These can be obtained by sending (1) the application fee of Rs. 40/- only by a crossed Bank Draft drawn in favour of IIT *————payable at *———— (* insert the place of IIT to which you are making the request) or Indian Institute of Science, Bangalore payable at Bangalore (2) a requisition letter giving the Bank Draft details and (3) two slips of size 5cm x 10cm indicating your postal address in **CAPITALS** to any of the following.

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Convocation

Agricultural Technology Parks

Dr. M.S. Swaminathan, President, International Union for the Conservation of Nature and Natural Resources, advocated the setting up of Agricultural Technology Parks which could sponsor agricultural projects such as the establishment of Poultry. Horticulture and Aquaculture Estates on the model of Industrial Estates, the development of wasteland through appropriate tree plantations, and a wide variety of programmes in harnessing additional sources of energy like Biogas and Biomass, solar and wind energy, mini hydel and tidal energy. Dr. Swaminathan was delivering the Convocation Address at the Eighth Convocation of the Assam Agricultural University, Jorhat. He hoped 'Assam Agricultural University in collaboration with appropriate credit institutions will take the lead in setting an Agricultural Technology Park which can serve as window into the new world of technological opportunities open to the rural people of Assam'. Excerpts.

The multi-disciplinary team (headed by P.R. Dubhashi, 1980) which had several experts trained from this University and other knowledgeable persons from Assam made the following recommendations for elevating and stabilising crop production and farm income :

1. Change in the cropping pattern : the area in *Rabi* season, may be substantially increased in order to raise good crops during flood-free season extending from October to May. Today the flood-prone season is the main cropping season.
2. Introduction of short duration varieties of rice. These varieties would help harvesting of the *Kharif* crop in October rather than December and would vacate the land for the Rabi season.
3. Encouraging Rabi crops like Wheat, Oilseeds, Potato and pulses through intensive programme.
4. Creation of additional irrigation facilities through shallow tube-wells for irrigation crops particularly during *Rabi* season.
5. Full utilisation of the irrigation potential under the major irrigation projects like Jamuna and other medium irrigation projects through the establishment of Command Area Development Authority.
6. Use of diesel pumps for lift irrigation.
7. Raising crop intensity from 108% to 115% with the use of irrigation.
8. Reduction of *Jhum* cultivation.
9. Intensification of the programme of agricultural extension.
10. A substantial increase in agricultural inputs specially chemical fertilisers and production and use of organic manure; use of phosphatic fertilisers since the soils are acidic and are deficient in phosphatic contents.
11. Intensive use of plant protection and pest control measures.
12. Stepping up of short term, medium term and long term agricultural credit for purchase of inputs.
13. Taking measures for strengthening services to farm families through the Gram Panchayat level Societies, Marketing Societies, State Fedaration, Commercial Banks, Agro-Industries Corporation and private sector agencies.
14. Co-operative Marketing and Processing and full utilisation of the capacity of Co-operative Rice Mills, Jute Mills, Fruit Processing Units, etc.
15. Credit insurance.
16. Intensification of Rural Electrification programme.
17. Acceleration of the programme for strengthening the flood control measures.
18. Augmentation of exploitation of fishery resources, particularly encouraging the air breathing fish production in swampy waters and composite fish culture.
19. Post Harvest Technology : Improvement in drying, storage and marketing.
20. Raising milk production through genetic improvement, better nutrition and producer-oriented marketing.
21. Horticulture : Assam stands third in respect of horticulture, but its productivity is low. The per hactare production of fruit is less than 4 tonnes as compared to 10 tonnes per hectare in Karnataka, Tamil Nadu, Andhra Pradesh and Bihar.

22. Promoting Social Forestry and Agro-forestry.

Productivity is a function of the interactions between the physiologic efficiency of the plant or farm animal and the management efficiency of the farm family. Both the physiological efficiency in crops and farms animals and the management efficiency of farm families provide scope for further impovement.

The winter season which provides immense opportunities for greater production still remains under-utilised. The management efficiency prevalent in plantation crops like tea is yet to have an impact on small farm food crop production. The potential for inland fisheries also remains inadequately tapped. Thus we can continue to say that Assam has a large untapped production reservior in crop husbandry, animal husbandry, fisheries and forestry. This is a capital the fruits of which the people of Assam can enjoy provided there is integrated action on the following three areas :

(a) Development of a package technology which is ecologically sustainable and economically viable; this is the task of the Agricultural University and other scientific institutions;
(b) Package of services including extension, credit and other inputs such as seeds and fertilizers; and
(c) Package of Government policies which can help all farmers irrespective of their economic status to take advantage of new technologies.

A few years ago I coined the term 'symphonic agriculture' to indicate harmony and mutually beneficial interaction amongst these three packages. An urgent task before you is to examine how the initiative of individual farmers, group cooperation among farmers in a village and government support could become mutually reinforcing. **There is no miracle in agriculture or any other field of human activity. A country like the Netherlands which is about the size of Assam earns more from agricultural exports alone than what our entire country is able to earn from all exports. We must ask how such a striking progress has been achieved.** You may like to get such questions studied in greater detail in the Districts of Darrang, Nagaon and Sonitpur which have been identified for intensive agricultural production under the frame work action plan for foodgrains production.

Talking in broad terms, the following are some of the major problems facing Indian agriculture :

1. A vast majority of our farms are very small in size. Over 80 million out of the 90 million operational farm holdings in the country are below 2 ha in size. How can we help the small farmers to improve the productivity and profitability of their farms through the optimum use of the land, water, credit and labour resources available to them ?
2. A majority of the rural population is young (under the age of 21). The future of our agriculture will depend on our ability to attract and retain youth in farming and allied rural occupations. How can farming become both intellectually and economically satisfying for young men and women ?
3. Much of our agriculture is rainfed. How can we manage both the S.W. and N.E. Monsoons better, so that we can enhance the benefits from a good monsoon and minimise the adverse impact of unfavourable monsoons on the rural population as well as on farm animals and crops ? What are the steps needed for imparting greater stability to agricultural production ?
4. A considerable proportion of our rural population has no assets—neither land nor livestocks nor fish ponds nor trees. How can we generate greater opportunities for gainful employment in rural areas through an integrated attention to farm and off-farm employment ? How can we design land and water use strategies which can have a beneficial impact on growth linkages between the primary and secondary and tertiary sectors of economic activity ? Can we orient farming systems research in such a manner that about 4 to 5 jobs are created in the secondary and tertiary sectors for every person working in the primary sector ?
5. Land is a shrinking resource for agriculture. Our water resources are also not being used in a sustainable manner. How can we impart a dimension of ecological sustainability of agricultural production, so that today's progress is not at the expense of tomorrow's prospects ?
6. Women play a significant role in both the production and post-harvest phase of farming. What additional steps are needed to reduce drudgery and increase output, efficiency and income in women-specific operations ? How can women play their legitimate role in technology generation and transfer ?
7. The frontier areas of techno-

logy like bio-technology, satellite imagery, micro-electronics and computer sciences provide opportunities for upgrading the management efficiency and profitability of small holdings. How can we integrate traditional and frontier technologies in a manner that we can achieve the triple goals of more food, more jobs and more income in rural areas and make farming and other rural occupations intellectually stimulating? What is our technological vision for the future of the farm sector?

8. Illiteracy is still widespread in rural areas, particularly among women of the economically handicapped sections of the population. What steps are needed to impart to the rural population—whether literate or illiterate—the latest technical skills? Are existing educational and extension mechanisms adequate?

9. How can we extend a new deal to small farmers and landless labour families? What organizational steps are needed to promote efficient decentralised production of farm products with the support of key centralised services? How can the beneficial linkages among crop husbandry, animal husbandry, forestry, fisheries and agro-industries be strengthened? How can input supply services be streamlined so that inputs become available at the right time and in adequate quantity and quality? What input and output pricing policies are needed to stimulate and sustain interest in ecologically sustainable agriculture?

10. What additional public instruments and measures are needed to improve the productivity, profitability, stability and sustainability of the major farming systems in the country? What are the packages of incentives needed to promote group endeavour in the adoption of knowledge-intensive and ecologically sound systems of land and water use?

The Agricultural University offers an excellent opportunity to study land and water use strategies in an integrated manner. You can help the State Government and people to develop a sustainable land and water use policy based on the classification of land into the following three categories:

(a) Conservation areas like National Parks, Wild life Sanctuaries and Biosphere Reserves which should be maintained in their pristine purity,

(b) Restoration areas for upgrading degraded land, and

(c) Sustainable intensification areas where crop and animal production can be increased on an ecologically sustainable basis. The University can undertake multi-disciplinary studies involving both social scientists and biological scientists. The Agricultural University has to be a centre not only for learning but also for reverse learning that is to say, a process of drawing on the knowledge already present in rural communities, whose traditions have evolved in balance with their environment and from which valuable lessons can be learnt.

A Convocation is a happy occasion. It marks the end of one phase in a young persons' life and the beginning of a new one which will be full of challenges and struggle. The immediate problem that will face young graduates is the question of employment. In fact, the 'famine of jobs' will be the most serious problem we will have to contend within the remaining years of the century. The battle against unemployment, in my view, can be won only by choosing rural areas as the arena to fight the battle. It is in rural areas that we have maximum opportunities for generating gainful employment. This will call for an appropriate blend of intellect, labour and capital. Unfortunately, our present personnel policies have a built-in urban bias. While we feel deeply concerned when the water supply in big cities fails for some hours, we are not unduly disturbed by the fact that about 150,000 villages in the country still do not possess even one source of safe drinking water. Educated youth having degrees even in professional fields like engineering, medicine and agriculture are unwilling to seek or accept jobs in rural and neglected areas because of the lack of essential infrastructure for the quality of life they desire. Here again it is only through the development of programmes which will facilitate a continuous involvement of the student community in rural development projects that the mental aversion to working in the countryside can be overcome. The University should Promote an 'Earth Care' service programme for all students. Such a programme should be designed to promote both learning by doing and love for nature. It should involve intellectually satisfying assignments such as establishment of National Parks, gathering ground truth data for remote sensing studies, social forestry, establishment of fish hatcheries and poultry estates, etc.

The National Science and Technology Entrepreneurship Development Board which I chaired in 1981-82 decided in 1982 to sponsor a programme for the establishment of S & T Entrepreneurship Development Parks in our universities. In these Parks, educated youth can be enabled to take to a career of gainful self-employment based upon the expertise available in a consortium of universities and technical institutions. The S & T Entrepreneurship Development Park could sponsor projects in fields like the manufacture of electronic equipment, teaching aids, small industries, Bio-technology and a range of activities in agriculture, such as the establishment of Poultry, Horticulture and Aquaculture Estates on the Model of Industrial Estates and the development of wastelands through appropriate tree plantations. A wide variety of programmes in harnessing additional sources of energy like Biogas and Biomass, solar and wind energy, mini hydel and tidal energy can be sponsored. The great advantage of establishing such Parks in universities will be that the economic viability of new technologies can be assessed and greater self-confidence generated among fresh graduates. Also self-employment groups can be fostered and complementary expertise developed among individual members of the group, some becoming experts in the production phase and the others in the marketing phase of the enterprise. I hope Assam Agricultural University in collaboration with appropriate credit institutions will take the lead in setting an Agricultural Technology Park which can serve as a window into the new world of technological opportunities open to the rural people of Assam. In Jorhat you have unusual opportunities for this, since there are several outstanding scientific institutions here. □

UGC Stresses Reforms in Syllabi

The Implementation Committee on Examination Reforms, set up by the University Grants Commission (UGC), ha recommended that examination reforms will not be practicable or successful unless there are reforms in the design of courses and their structure. Noting with concern that the implementation of reforms in examinations has been very slow, the committee says. "It is mostly the unitary universities and those which are mainly offering courses in professional fields like agriculture, engineering technology and applied sciences, have implemented any worthwhile examination reforms." It, therefore, suggests for active involvement of teachers in examination reforms.

The committee also suggests for organisation of orientation courses and training programmes for teachers, development of question banks by the universities on their own, introduction of grading system and linking of unit courses with the semester system to enable students to have greater flexibility in the combination of courses on an inter-disciplinary basis.

The committee shows that 56 universities and institutions have taken steps to demarcate the syllabus in each paper into well-defined unit areas of content along with topic-wise break-down. However, 53 universities have decided that examiners should be free to repeat question set of the previous examinations. Fifty universities have also decided that the choice for students should be restricted to each unit of syllabus instead of giving wide choice to students for answering questions. But 52 universities are of the view that no examination should be held without fulfilling the requirement of a minimum number of lectures, tutorials and laboratory sessions.

The committee also recommends that the universities having a large number of affiliated colleges may make efforts to improve the conduct of examinations through effective de-centralisation. It suggests for constitution of an expert commitee to consider the question of developing alternate system of evaluation in place of external examinations for affiliated colleges and the question of some universities to function only as examining bodies for a number of colleges. Moreover, a group is to be set up for suggesting modifications in the qualifying test for admissions in universities and colleges.

The committee is of the view that information should be collected from universities regarding steps taken by them for making innovations and experiments in the conduct—examinations like printing and distribution of question papers with questions arranged in different sequences. As regards introduction of legislation to treat various malpractices connected with examinations as cognisable and non-bailable offences, it was emphasised that such legislations should be introduced by the State Governments taking into consideration the views of their universities.

INFOTEK National Conference

A National Conference on Applications of Mini and Micro Computers in Documentation, Information and Libraries was organised by the Institution of Information Technology (INFOTEK), at the Central Leather Research Institute (CLRI), Madras during 28th-30th Septemper 1988. The conference was co-sponsored by the Dept. of Scientific and Industrial Research (DSIR), New Delhi under its NISSAT (National Information System for Science and Technology) programme and the Central Leather Research Institute under its NICLAI (National Information Centre for Leather and Allied Industries) Project.

Dr. V.A. Kamath, President, INFOTEK in his welcome-cum-keynote address traced the background of the INFOTEK and pointed out its achivements during the last one year. He made a very brief survey of the computer scenario, both international and national and noted that in spite of the spectacular advances made by country in the field, India was way behind the advanced countries like the U.S.A., Japan, France, U.K., and the FRG in practically all areas of computer technology. India certainly had, he said, the potential to emerge as a top computer power by the end of this century, if the potential was properly and fully harnessed.

Dr. K.V. Raghavan, Dy. Director, C.L.R.I. in his presidential address, explained the importance of the computer usage for information storage and retrieval. He also expressed the need for the scientific community to come forward to understand the concept of on-line information search and retrieval for their research work.

Shri V.R. Deenadayalu, Chairman and Managing Director, Madras Refineries Ltd. (MRL), who inaugurated the conference, reviewed briefly how the electronic digital computer had come into the picture of information technology and its usage in other fields. He took this opportunity to point out some of the computer applications in the areas like payroll accounting, materials managements etc., at MRL, Madras. He also said that MRL was planning to hook-up the personal computer at their R&D centre to DIALOG of USA. He stressed that a plan for introducing computerised information system was mandatory in today's service environment.

Delivering the valedictory address Sri C.N. Krishna Bharathy, IAS, Joint Secretary to Government & Director of Information & Public Relations, Information & Tourism Department of Govt. of Tamil Nadu, touched upon the areas such as Information Revelation, Computers & their Applications and Computers in Indian Information Scene. He also explained the work being done at their department to integrate Micrographic Technology and Computer Applications to control the news items appearing in dailies, weeklies and monthlies as part of News Information Management System (NIMS). He extended a request to the Micrographic Congress of India (MCI), New Delhi and INFOTEK, Madras to help them in developing and implementation of NIMS. He claimed that if NIMS came into operation then the Tamilnadu would be the first State in the country to have such a result oriented Information System.

About 30 papers were presented to the Conference under six subject groups, Viz., Bibliographic Data Base, Bibliographic Software, Library Automation, DBMS Applications, Information Networks and Emerging Technologies. Over 50 delegates from all over India attended the conference.

Science Centre for Delhi

An ambitious project for developing India's biggest National Science Centre in New Delhi to promote scientific attitude and temper among school children in particular and people in general is reported to have been formulated by the Centre.

The National Science Centre, to be set up by the National Council of Science Museums of the Human Resource Development Ministry, when fully developed, will consist of a children's science park and a permanent exhibition on ancient India's excellence in science and technology based arts and crafts and on the continuum of the traditions over four millennia.

Some of the innovative features of the children's science park, to be set up near Delhi University, will be an amateur radio station, an aero flying club where children will be actually flying model aircraft, weather forecasting unit and a sky observation programme.

A 16-acre plot has been acquired for establishing the centre. In addition, the Trade Fair Authority of India (TFAI) has given 7,000 square metres of land for the permanent exhibition at Pragati Maidan centre planned as nucleus for the entire, northern region as per the recommendations of a study group of the Planning Commission. It is proposed to set up regional centres at the State capitals and district science centres as satellites to the main centres.

Work is already in progress for the science park. Numerous exhibits are being developed and installed. Planning and architectural design of the main building of the centre is being done by the planners of the 'Dream Castle' in Nehru Science Centre, Bombay. While it is proposed to involve the students of the various schools in the capital on a regular basis in order to reach out to the areas, the centre will acquire mobile vans under a scheme called science on wheels. All exhibits in the centre are conceived, constructed and installed by the exhibition development laboratory of the centre.

Guidance for the College Youth

Immediate attention to the guidance needs of the College Youth lest they should be lost in the confusion caused by the complexities of modern life, was stressed by Dr. (Miss) Mehroo D. Bengali, Vice-Chancellor, Bombay University. Dr. Bengalee was addressing the participants at the United State Educational Foundation in India (USEFI)'s All India Workshop for Chiefs of the University Employment Information & Guidance Bureaux, held in Bombay University on 24-26 September, 1988.

Outlining the plight of the youth in the higher educational institutions, she stated that when they transit from school to college in a routine scheduled way, they just do not know how to employ their time and resources beyond those 4-5 hours of class work per day. This naturally results in wastage of their time and resources. In addition, because of complexities of present-day world and the tremendous opportunities for study and for employment, the college youth get lost in confusion when faced with the problem of choice. She felt that the University buréaux would do well to computerise the information, release their staff to have adequate time for guidance and counselling the youth to enable them to develop confidence and become independent and responsible for their decisions. Speaking from her experience in the field of guidance and counselling for more than three decades, she felt that the need of the hour is providing the youth with specific programmes that would help them in many ways, say, for example, in budgeting their time. She suggested that our youth force be made youth resource and toward this end all our education departments should be transformed into human resources departments. Though we are trying to monitor these programmes in terms of human engineering, the job is a challenging one. She exhorted the University Bureaux to also work in the direction of helping the youth with foreign qualifications to get appropriate placement here.

Bhatnagar Awards

Nine scientists and technologists have been selected for the Shanti Swarup Bhatnagar prize for 1987. The prizes, instituted in 1957 in memory of Sir Shanti Swarup Bhatnagar, the first Director of the Council for Scientific and Industrial Research (CSIR) carry a cash award of Rs. 50,000 and a citation.

The recipients in the field of physical sciences are Prof. Vijay Kumar Kapahi, Tata Institute of Fundamental Research, Bangalore, and Prof. Probir Roy, Tata Institute of Fundamental Research, Bombay.

The prize in the category of chemical sciences has been awarded to Prof. Debashis Mukherjee, Indian Association for the Cultivation of Science, Calcutta.

The award for biological sciences is shared by Prof. Sudhir Kumar Sopary, Jawaharlal Nehru University, New Delhl, and Prof. Avadesha Surolia, Indian Institute of Science, Bangalore.

Prof. Shrikant Lele of the Banaras Hindu University, Varanasi, has been chosen for the prize in the category of engineering sciences.

The prize for mathematical sciences has been jointly awarded to Dr. R. Parimala and Prof.

Communication

Dear Sir,

VCs fall
Like a pack of cards
But there is no one to explain
Or tell us why.
We keep wondering
Why is it happening
Again and again
But we have not found
The method
Of arresting the slain.
Has Professor Amrik Singh
Tracing 'The issue at Mithila'
(University News, 26 Sept.)
Found a solution
To this damnation ?
Yes, he has traced a ray
But I know not what to say
Except to pray
For a fly over way
To stop —
The most
Ham-handed way
Of political say
In
The running
Of
Universities.

Yours etc.

V. Narasimhan
Sree Chitra Tirunal Institute for
Medical Sciences and Technology
Trivandrum-695 011.

Tarlok Nath Shorey, both of the Tata Institute of Fundamental Research, Bombay.

Prof. Pramod Sadasheo Moharir of Roorkee University has been chosen for the award in the category of earth sciences.

Environmental Institute

Uttar Pradesh Directorate of Environment and Forest (DOEF) is reportedly considering a proposal to open an Environmental Institute with a distinctly separate hill division for settling issues relating to environmental consideration in the U.P. hills. According to Mr. P.R. Singh, Director, DOEF, the institute would focus its attention on the relevant research, education, training and co-ordination problems and programmes continuously within and outside the state.

Women's Studies Centres

The UGC Standing Committee on women's studies has recommended the proposals from five universities and a post-graduate college for the setting up of women's studies centres. The institutions, whose proposals are being considered by the University Grants Commission, are the universities of Gulbarga, Gauhati, Calcutta, Kurukshetra and Andhra and the BNKB Post-Graduate College, Akberpur (UP).

In 1986 the UGC had launched a scheme for incorporating women's studies within the university system. The objectives of the scheme were both academic and social. Shortly thereafter, the UGC had extended support to Delhi University for setting up women's centres.

A New Research Journal

The School of Optics, Hyderabad, a Registered Society, proposes to launch a new research periodical, 'Journal of Pure and Applied Physics' to cater to the needs of the third world physicists. Its first issue will be released in December, 1988 at Hyderabad. Further details can be had from Prof. P.K. Mondal, President, School of Optics, 1-10-78, Ashoknagar, Hyderadad-500 020.

Exhibition of University Level Books

Raja Ram Mohun Roy National Educational Resources Centre, Ministry of Human Resource Development, Government of India, in collaboration with Bhopal University, organised a three-day book exhibition of University level books from 26th to 28th September, 1988. The exhibition was inaugurated by Dr. S.M. Dasgupta, Vice-Chancellor of Bhopal University. Nearly 1100 selected books, including those produced by Indian authors in English and Hindi were exhibited.

News from Agril. Varsities

Kharif Kisan Mela

Kharif Kisan Mela was organised by Narendra Deva University of Agriculture and Technology, Faizabad at its main campus at Narendra Nagar (Kumarganj). More than 1,26,629 farmers from fifteen districts of Eastern Uttar Pradesh as from Bihar and western U.P. attended 93 stalls of various departments including the University displaying the various activities undertaken by them to improve socio-economic condition of the farming communities especially small, marginal and landless farmers were set up. Industrial and handicraft products made by the girls and women of the weaker sections of the society were also displayed.

Hon'ble Minister for Agriculture, Dr. Krishan Veer Singh Kaushal inaugurated the Mela. He said that it was only the farmer who deserved to be called 'Annadata', the food giver, who fed the humanity and no efforts should be spared to ameliorate his lot. He congratulated the agricultural scientists of the University for the devotion to work and result oriented research, which was turning the wasteland & water-logged soil into lush green paddy fields.

The Agriculture Minister assured the University of all help and cooperation, particularly in opening college of the Animal Husbandry at the University Campus itself. He assured that this Extension Service of the University would be further strengthened so that 15 districts are fully covered under effective extension service.

Dr. Kirti Singh, Vice-Chancellor of the University and a renowned vegetable scientist, said that the biggest achievement of the University was the successful introduction of new technology to reclaim the Usar and Waterlogged soil in the campus-farms turning it into paddy fields and transferring the same technique to 15 other centres at the farmers' fields in Jagdishpur (Sultanpur district) near the University.

State Minister for Revenue Sri

Sheeta Ram Nishat appealed to the Scientists that Location specific researches on location specific problems of the farmers of the Eastern U.P. must be given top priority while formulating the research strategies.

Dr. Kaushal visited some of the demonstration farms in Jagdishpur in Sultanpur district and the University Campus demonstration fields where usar-resistant paddy variety 'Sarjoo-52', and 'Mahsoori' have been grown successfully by the University under the Lab to Land Programme sponsored by the Indian Council of Agricultural Research. Field demonstrations had been undertaken in 51 villages under 11 development blocks. 5495 cultivators' farms were selected and nearly 9,215 demonstrations were arranged at Sultanpur district.

U.S. Assistance for Plant Genetic Project

An agreement between the Indian Council of Agricultural Research (ICAR) and the U.S. Agency for International Development (USAID) for a joint project to strengthen the national system for prescribing and using the vast and rich genetic resources is reported to have been signed by Dr. N.S. Randhawa, Director-General of ICAR and Mr. Grant Smith, US Charge d'Affairs.

Under the agreement, USAID would provide a grant of $13 millions to the National Bureau of Plant Genetic Resources (NBPGR) to assist in conserving the plant genetic resources. The ICAR would provide a rupee equivalent of $8.66 millions.

Dr. R.S. Pauda, Deputy Director-General of ICAR, described the project as unique in the history of the NBPGR, as India represented one of the eight important gene centres in the world.

Superior Variety of Mustard

Oilseeds Scientists at the Narendra Deva University of Agriculture and Technology have evolved a variety of mustard (NDR 8501) which is high yielding as well as tolerant to major insect-pests and diseases. The new variety has surpassed the national checks, Varuna, Kranti and Krishna in seed yield by 29.63%, 13.78% and 19.95%, respectively. In oil yield (kg/ha), NDR 8501 has shown superiority of 31.95% over Varuna, 14.60% over Kranti and 23.36% over Krishna. For late sown condition this variety has established its superiority over all the standard varieties by a considerable margin. NDR 8501 has also been found superior for saline/alkaline soils than the existing varieties.

In view of its outstanding performance at all stages of testing, it has been recommended for pre-release multiplication by Annual Oilseeds Workshop held at Mahatma Phule Agriculture University, Pune, from August 10-13, 1988 for the States of Uttar Pradesh and Madhya Pradesh.

AIU News

National Youth Fine Arts Exhibition

The Association of Indian Universities (AIU) will organise an All India Youth Exhibition of Fine Arts with the financial support of the Department of Youth Affairs and Sports, Ministry of Human Resource Development, Government of India at Delhi in February, 1989. The exhibition will provide an opportunity to the talented youth to display their artistic capabilities through medium of painting, art and craft. Inter-university Youth Festivals organised by AIU include fine art items such as on the sport painting, collage, poster making, clay modelling and cartooning. It is proposed to select two best artists in each event in the four Inter-University Zonal Youth Festivals 1988-89 who will be invited to display their works. The Youth artists will also exhibit their works executed prior to the festivals. A special feature of the exhibition will be a live performance by the selected artists.

We Congratulate...

(i) **Prof. S.P. Nautiyal who has been appointed Vice-Chancellor of Garhwal University, Srinagar.**

(ii) **Shri Bimalendu Mukherjee who has taken over as Vice-Chancellor of Indira Kala Sangit Vishwavidyalaya, Khairagarh.**

(iii) **Dr. R.N. Gupta who has been appointed Vice-Chancellor of Purvanchal University, Jaunpur.**

(iv) **Dr. Solaiappan Jayaraj who has been appointed Vice-Chancellor of Tamilnadu Agricultural University, Coimbatore.**

(v) **Prof. Shivajirao Bhosale who has taken over as Vice-Chancellor of Marathwada University, Aurangabad.**

(vi) **Prof. Krishna Nath Chatterjee who has taken over as Vice-Chancellor, North Bengal University, Rajarammohunpur.**

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

HUMANITIES

Philosophy

1. Mathur, Premlata. *Aesthetics of croce : A critical study.* Devi Ahliya. Dr. R.N. Vyas, North Rajmohalla, Indore.

Religion

1. Samajdar, Bijanbandhu. *An analytical study of the Dhatukatha.* Delhi.

Language & Literature

English

1. Dasgupta, Nandita. *A sense of domestic ethos in Jane Austens' novels.* Devi Ahilya. Dr. R.C. Ojha, Indore Christian College, Indore.

2. Hirudoyaraj, A. *A contrastive study of relative clauses in English and Tamil with reference to the problems of Tamil learners of English.* Madurai.

3. Kalra, Y.P. *Themes in Browning's dramas and dramatic monologues, 1837-55.* Agra, Dr. Virendra Sharma, Ex-Head, Department of English, D.S. College, Aligarh.

4. Nath, Anjan K. *Myth and tradition : The major critical statements and assumptions of Northrop Frye and T.S. Eliot.* NEHU. Dr. A.G. George.

5. Nayar, Rana. *Edward Albee : A study of human relationship in his major plays.* HP.

Sanskrit

1. Tewari, Sugamta. *Prahasan samakon ka itihasik evam samalochanatmak adhyayan.* Ravishankar. Dr. K.D. Saraswat, Department of Sanskrit, Govt. Girls P.G. College, Ujjain.

Hindi

1. Bedi, Puneet. *Addhunikta aur Hindi kahani, 1934 se 1982.* Panjab.
2. Bikram Singh. *Hazari Prasad Dwivedi ke saundaryabodh.* Delhi.
3. Chakravarti, Krishna. *Chhattisgarh ke prakashit anchalik upanyason ka anusheelan.* Ravishankar. Dr. Vinay Kumar Pathak, Department of Hindi, Govt S.B.R. College, Bilaspur.
4. Jha, Kabi Kanti. *Hindi chayavadi kavya ke sandarbh mein sadrishyavidhan kee kavya shastriya tatha bhasha shastriya mimansa.* Calcutta.
5. Khurana, Sarita. *Hindi kavita mein Marxwadi aur Astitvawadi vichardharaon ka dwanow, 1950-70.* Delhi.

6. Kurian, Sunnykutty. *Hindi kee anchalik kahaniyan : Fanishwar Nath Renu, Sivaprasad Singh evam Markandeya ke vishesh sandarbh mein.* CUST. Dr. A Aravindakshan, Reader, Department of Hindi, Cochin University of Science and Technology, Cochin.
7. Mishra, Archana. *Chhayavadi Kavya kee roop samagri.* Durgawati. Dr. S.S. Mishra, Department of Hindi, Government Post-Graduate College, Narsinghpur.
8. Nirdosh, Lakhbir Singh. *A comparative study of modern Hindi and Punjabi poets, 20th century.* Calcutta.

9. Raju, M.P. *Madhyakaleen bhakti sahitya mein Isayiyat ka prabhav : Vastavikta ka akalan.* Vikram. Dr. H.M. Budholiya, Department of Hindi, Vikram University, Ujjain.

10. Sen, Mukula. *Rangmanchiya tantra kee drishti se Jaishankar Prasad ke natakon ka adhyayan.* Ravishankar. Dr. Ganga Charan Tripathi, Principal, Govt. College, Sihawa Nagar.

11. Sharma, Ashish. *Swatantrayottar Hindi prabandhkavyon mein nayika ka swaroop.* Panjab.

12. Shukla, Shashi. *Beesaveen shatabdi ke pramukh Hindi mahakavyon mein mithak tattwa.* Ravishankar. Dr. V.P. Pandey, Department of Hindi, Govt. Science College, Raipur.

13. Tewari, Ramkrishna. *Avadhi tatha Chhattisgarhi lok sahitya ka tulnatmak anusheelan.* Ghasidas. Dr. P.P. Sharma, C.M.D. College, Bilaspur.

14. Thippeswamy, *Harishankar Parsai : Life and works—a study.* CUST. Dr. N. Raman Nair, Prof. and Head, Department of Hindi, Cochin University of Science and Technology, Cochin.

15. Usharani, G. *Comparative study of the vocabulary of Hindi and Konkani.* CUST. Dr. L. Suneetha Bai, Reader, Department of Hindi, Cochin University of Science and Technology, Cochin.

Urdu

1. Masood Hashmi. *Urdu Iughat Nigari ka tanquidi jaiza : Urdu se Urdu.* Jamia. Prof. Masud Husain Khan, Former Vice Chancellor, Jamia Millia Islamia, New Delhi.

Oriya

1. Ratha, Tulasi Prasad. *Surendra Mohantynka upanyasare abakhyara chitra.* Sambalpur. Dr. Adikanda Sahoo, Reader, Department of Oriya, Sambalpur University, Burla.

Tamil

1. Thankapazham, T. *Nalavenpa and Naidatham : A comparative study.* Kerala. Prof. C. Jesudasan, Pulippunam, Kottathurai, PO Kanyakumari Distt.

Kannada

1. Subrahmanya Bhatta, K. *Muliyatimmappayya : Ondu adhyayan.* Mangalore. Dr. B.A. Vivek Rai, Prof. and Head, Department of Kannada, Mangalore University, Mangalore.

Telugu

1. Chakrapani Rao, Vadavalli. *Mahabharatamu Drowpadi : Oka itihasika visleshana.* Andhra.

2. Sambasiva Rao, Garlapaty. *Telugulo serangadhara katha.* Andhra.

3. Suryanarayana Raju, Kalidandi. *The beauty in Vasucharitra.* Andhra.

Geography

1. Shreshtha. Vinod Prasad. *Resource-population relationships and ecological degradation in Tinau Watershed Nepal,* Delhi.

2. Shrivastava, Rajendrakumar. *Ujjain Jile mein nagariya adhivason ka vikas.* Vikram. Dr. B.M. Singhal, Department of Geography, Madhav College, Ujjain.

History

1. Jaya Rani, M. *Mountstuart Elphinstone : His years in Bombay, Gujarat, 1819-1827.* Baroda.

2. Ray, Rama Kanta. *Feudatory states of medieval Orissa CIR 750 A.D. to CIR 950 A.D.* Sambalpur. Dr. J.K. Sahu, Reader, Department of History, Womens' College, Bolangir.

3. Roy Chowdhury, Jyotsna. *Religious syncretism of Eastern India.* Calcutta. Dr. Kalyan Kumar Dasgupta, Vice-Chancellor, University of Kalyani, Kalyani.

4. Sahu, Jaya Prakash. *Early history and culture of South Kosala, from early times till the rise of the Somavansis.* Sambalpur. Dr. S.C. Panda, Reader, Department of History, Sambalpur University, Burla.

5. Sharma, Ram Swarath. *Mahabharat ke adhar per Bhartiya arthik jeevan ka itihas.* Ranchi.

INDIAN INSTITUTE OF SCIENCE

BANGALORE-560 012

FACULTY POSITIONS IN AEROSPACE ENGINEERING

I. PROFESSOR

Essential : Ph. D. Aeronautical Engineering and considerable experience in design/development/research pertaining to Helicopters. Has to teach Postgraduate courses, initiate and participate in R&D Projects relevant to Helicopter Industry, lead a research group and interact with specialist groups within and outside. Must have expertise in Helicopter aerodynamics, performance, wind tunnel testing, rotor dynamics stability and control, aero-elasticity, design and development of components and experimental techniques.

II. ASSISTANT PROFESSOR OR LECTURER

Essential : Ph. D. in Aerospace or Electrical/Electronic Engineering or an allied disciliplinc and five years (2-3 years for Lecturer) experience in one or more of the following areas :

Avionic systems, Aerospace Navigation and Guidance systems Electromagnetic systems including Radar/Radio aids to Navigation, Signal psocessing and advanced Electronic Sensors, for aerospace applications.

Desirable : Experience in a combination of theory and analysis, software and hardware aspects and higher level teaching.

Total Emoluments: Professor Rs. 6,230/-, Asst. Prof. Rs. 5,230/- and Lecturer Rs. 3,146/- per month in scales Rs. 4500-7300, Rs. 3700-5300 and Rs. 2200-4000 respectively.

Applications and details can be obtained from the Registrar, Indian Institute of Science, Bangalore-560 012 on request (separately for each post) accompanied by IPO for Rs. 5/- (free for SC/ST on production of Caste Certificate from a competent authority) drawn in favour of the Registrar, alongwith self-addressed Rs. 5-40 stamped envelope, size 28 x 18 cms. on or before 25th Oct. 1988.

The last date for submission of completed application form is 7th Nov. 1988.

R(IA)308-17/18/88 **REGISTRAR**

INDIAN COUNCIL FOR CULTURAL RELATIONS

Applications are invited for the following posts at the **Indian Cultural Centres abroad:**

(i) **Yoga Teacher**

Qualifications and Experience Required

Essential : Graduate with diploma in Yoga; Practical training and experience of teaching Yoga for at-least **five years.**

Desirable : Ability to converse in Russian; knowledge of Indian Philosophy and Culture.

Duties will include conducting courses, imparting training in Yoga, Lecture demonstrations etc.

(ii) **Vocal Music Teacher** (Hindustani and Light Classical)

Qualifications and Experience Required

High proficiency in Hindustani and Light Classical Music with at-least **five years** experience of teaching and organising/staging public/Radio/TV performances; working knowledge of English. Ability to converse in Russian **desirable.**

Age for (i) and (ii) **between 30-45 years** relaxable in exceptional cases.

Entitlements

Pay in the revised scale of Rs. 2200-75-2800-EB-100-4000 plus Foreign Allowance, Children Education Allowance, Medical Facilities, Rent Free Accommodation, International Passage for Teacher, spouse and upto three dependent children, and baggage allowance as admissible under the rules. Appointment will be on contract/deputation for a period of three years. Application typed in English on quarto size paper indicating seriatim name, address, date of birth, marital status, educational qualifications/professional training, languages known, field of specialisation, professional experience, present post, basic pay and scale of pay, participation in performances/lecture demonstration etc., and other relevant information, should be sent to the **Officer on Special Duty (AD), Indian Council for Cultural Relations, Azad Bhavan, Indraprastha Estate, New Delhi-110002** latest by **18th November, 1988.** Those in service should apply **through proper channel.**

XLRI JAMSHEDPUR

The Institute invites applications for admission to

TWO-YEAR POSTGRADUATE PROGRAMMES IN

(a) BUSINESS MANAGEMENT

(b) PERSONNEL MANAGEMENT & INDUSTRIAL RELATIONS

FELLOW PROGRAMME IN MANAGEMENT

WRITTEN TEST :

On Sunday, January 8, 1989 at the following centres :

Bhubaneswar, Bombay, Bangalore, Bhopal, Calcutta, Cochin, Delhi, Hyderabad, Jamshedpur, Kanpur, Madras and Patna, Guwahati. (Bangalore, Bhopal, Guwahati may be considered depending on the response).

LAST DATE :

Issuing Application Forms :

October 31, 1988.

Receiving Completed Forms :

November 28, 1988.

HOW TO APPLY : Mail your request for the prospectus and application form to the Admissions Coordinator, XLRI, Post Box 222, Jamshedpur 831 001 enclosing (i) a non-refundable crossed demand draft for Rs. 40/- made out in favour of 'XLRI JAMSHEDPUR' drawn on 'State Bank of India, XLRI (Jamshedpur)' or 'State Bank of India, Jamshedpur' and (ii) two typed 9 x 6 cm self-addressed slips with PIN CODE.

Local Candidates may pay in CASH

Programme	Eligibility	Note
1. Business Management 2. Personnel Management & Industrial Relations	Three year Bachelor's degree in any discipline with at least 50% marks*	Those completing their final exams by June 30, 1989 may also apply
3. Fellow Programme in Management (equivalent to a Ph.D)	MBA or its equivalent BE with 2 years work experience/Masters in any discipline with at least 50% marks*	Stipend awarded : Rs. 1500/-p.m. XLRI alumni with CQPI of 6 are exempted from the written test

*40% for SC/ST candidates.

ANNAMALAI UNIVERSITY

ANNAMALAINAGAR

NOTIFICATION

56th Annual Convocation—1988

A convocation for conferring Degrees, Titles and Diplomas will be held at Annamalainagar during the month of December, 1988.

Filled in applications from candidates for taking Degrees, Titles and Diplomas either In Person or In Absentia must reach the **Registrar, Annamalai University, Annamalainagar** on or before **7th November, 1988**. Printed forms of applications can be obtained by sending a self-addressed envelope affixing 0.60 paise stamp.

Post-Graduates, Professional and Research degree holders and Prize Winners in all other degrees are alone given the option for taking their degrees "IN PERSON". All the rest are required to apply for taking their degrees "IN ABSENTIA".

Distance Education Graduates

Those who have not already submitted their applications for the Degree/Diploma (In Absentia) may submit the same on or before **7th November, 1988**. Separate application forms will be issued for the Distance Education Graduates.

R. Rajamanickam
REGISTRAR

BIOMEET '89

(Biomedical Engineering Entrance Test)

for

M.Tech./Ph.D. Programmes in Biomedical Engineering

School of Biomedical Engineering, IIT Bombay

Qualifications required :

Candidates who have obtained their M.B.B.S. degree. Candidates who have passed their final M.B.B.S. examination and are undergoing internship are also eligible. The candidates of Engineering and Physical Sciences stream have to appear in GATE. Valid scores of GATE/BIOMEET are necessary to be eligible to get Institute Scholarship for these academic programmes.

The application form and the Information Brochure can be obtained by post from Chairman, BIOMEET, C/o GATE Office, Indian Institute of Technology, Powai, Bombay 400 076 **on or before 21st November, 1988** by enclosing a crossed draft of Rs. 50/- drawn in favour of Indian Institute of Technology, Bombay payable at Bombay.

Date of Examination : Sunday, 19th February, 1989.

Centres of Examination : IIT Bombay, IIT Delhi, IIT Kharagpur, IIT Kanpur, IIT Madras, IISc Bangalore.

CLASSIFIED ADVERTISEMENTS

SANJAY GANDHI POST-GRADUATE INSTITUTE OF MEDICAL SCIENCES

POST BOX NO. 375, RAE BARELI ROAD, LUCKNOW-226 001

ADVT. NO. 42/88 **LAST DATE : OCT. 31, 1988**

REQUIRES

Sl. No.	Name of Post	No. of Post Gen. Category	For SC/ST Category	Pay Scale (Pre-revised)	Total Emoluments at Min.	Max. Age Yrs.
				Rs.	Rs.	
1.	Executive Engineer (Civil)	1	—	1250-2050	2907	40
2.	Dy. Director (Horticulture)	1	—	1250-2050	2907	40
3.	Dietician	1	—	850-1720	1934.80	30
4.	Architect Assistant	1	—	690-1420	1552	30
5.	Foreman (Air-Conditioning)	1	—	690-1420	1552	40
6.	Foreman (Electrical/ Electronics)	1	—	690-1420	1552	40
7.	Assistant Public Relations Superintendent	3	—	690-1420	1552	35
8.	Junior Programmer	1	—	570-1100	1447	30
9.	Computer (Civil)	1	—	550-940	1340	30
10.	House Keeper	4	—	400-615	1132	30
11.	Store Keeper-cum-Pharmacist	5	1	470-735	1221	30
12.	Kitchen Supervisor	1	—	470-735	1221	30
13.	Data Entry Clerk	2	—	470-735	1221	30
14.	*Lower Division Assistant	24	6	400-615	1132	30
15.	Electrician-cum-Operator	8	2	400-615	1132	30
16.	Electrician-cum-Mechanic	1	—	400-615	1132	30
17.	Carpenter	1	—	360-480	987	30
18.	Receptionist-cum-Enquiry Clerk	2	—	354-550	1025	30
19.	Ward Master	6	1	354-550	1025	30
20.	CSSD Technician	5	—	354-550	1025	30
21.	Incinerator Operator	2	—	354-550	1025	30
22.	Mechanic-cum-Operator	2	—	354-550	1025	30
23.	Plumber	1	—	315-440	880.75	30
24.	Laundry Operator	5	1	305-390	897.53	30

* Designation and Scale of Pay is likely to be revised.

Minimum Qualification & Experience
For Post No. 1

(i) First or High Second Class degree in Civil Engineering from a recognised University/Institution.

(ii) Minimum 7 years experience in a reputed Institute or department in respect of execution of large construction projects.

(iii) Preference may be given to candidates who have secured post-graduate degree in Civil Engineering or similar branch.

For Post No. 2

(i) First or high second class M.Sc. (Agr.) in Horticulture.

(ii) Minimum 10 years experience in ornamental gardening in reputed organisation.

For Post No. 3

Essential : Bachelor in Science/ Home Science with a post-graduate Diploma in Dietetics. 2-3 years experience as Dietician.

Desirable : M.Sc. in food and nutrition/Dietetics. One year experience as a dietician in a teaching hospital.

For Post No. 4

First class Diploma in Architectural Assistantship from a recognised Institution. A minimum of 2 years experience in a reputed organisation.

For Post No. 5

First or good second class Diploma in Mechanical Engineering from a recognised institution/polytechnic. Minimum of 2 years experience in any reputed organisation / department / institution.

For Post No. 6

First/second class Diploma in Electrical/Electronic Engineering from a recognised University/Institution.

Minimum of 2 years experience of working in a reputed organisation.

Desirable : Experience of working on H.T. line and sound knowledge of maintenance of H.T. switchgear.

For Post No. 7

At least second class graduate degree with diploma in Journalism/Public Relations/Advertising.

Desirable : Experience in a reputed organisation involving duties of public relations and/or advertising and/or communication skills.

Post-graduate degree in any of the social sciences or in language with adequate experience may also be considered.

For Post No. 8

Post-graduate degree with a diploma in Computer Science in any subject,

For Post No. 9

First class Diploma in Civil Engineering from a recognised Institution/ Polytechnic. Minimum two years relevant experience in a reputed organisation/department/institution.

For Post No. 10

High School with 5 years supervisory experience of house keeping in a Hotel/ hospital/industrial house.

Desirable : Diploma in house keeping.

For Post No. 11

B. Pharm or Intermediate with Diploma in Pharmacy and 3 years experience of Store-Keeping and Pharmacy.

For Post No. 12

High School with Diploma/certificate in catering/kitchen/counter management from food craft/catering institute.

Desirable : 1-2 years experience in a reputed organisation/hospital.

For Post No. 13

Graduate with good knowledge of typewriting in English with one or two years experience in Data Entry.

For Post No. 14

Graduate with knowledge of noting, drafting and office procedures, with knowledge of English and Hindi Typewriting. Preference to candidates with experience of 1 year in similar capacity in Government/Semi-Government/Pvt. Organisation of repute.

For Post No. 15

High School and I.T.I. Trained Electrician, holder of 'C' certificate. Experience in making H.T. joints, maintenance of H.T. control panels, 11 KV/ 440 V transformers.

For Post No. 16

High School and I.T.I. certificate or equivalent 'C' licence holder of wiring, sound knowledge of working 11 KVA/33 KVA H.T. lines and distribution panels and transformers.

For Post No. 17

Certificate from I.T.I. or equivalent organisation in carpentry with a minimum 5 years trade experience, basic qualification High School with carpentry as main subject.

For Post No. 18

First/second class graduate from a recognised University with pleasing personality and good expression of English and Hindi.

Preference will be given to female candidates and those who have worked in a similar capacity for at least one year.

For Post No. 19

Essential : Diploma in Nursing.

Desirable : Experience of nursing in a large hospital/Medical College.

For Post No. 20

High School and 3 years experience in CSSD. Candidates with diploma in CSSD will be preferred.

For Post No. 21

High School and Ist class or IInd class certificate from Chief Inspector of Boilers (Office of State) for operatien of low pressure boilers/incinerators or minimum 2 years experience as incinerator operator in a reputed organisation/Hospital.

For Post No. 22

High School and Trade certificate from ITI as plumber/pump operator/mechanical fitter.

Desirable : 5 years experience.

For Post No. 23

High School and Certificate from recognised ITI in plumbing with minimum 5 years experience.

For Post No. 24

High School and 3 years experience in mechanical laundry in hospital or Hotel (Three Star/Five Star).

General Conditions

Allowances as admissible to the employees of U.P. Government will be provided. Additional increments ordinarily (Upto 5) may be considered in deserving cases. Relaxation in age as per rules may be considered in otherwise qualified candidates. In case of non-availability of candidates with prescribed qualifications, the Selection Committees are empowered to recommend relaxation of qualifications in suitable cases. Candidates belonging to SC/ST and other categories will be given preference as per rules.

Persons in employment should send their applications through proper channel. The Director reserves the right to reject any or all applications without assigning any reasons. Incomplete applications are liable to be rejected.

Candidates must mention on top of Application the Sl. No., name of post and Advertisement No.

Prof. B.B Sethi
DIRECTOR

SARDAR PATEL UNIVERSITY

VALLABH VIDYANAGAR-388 120

Notification No : EST/3 (1988-89) **Dated : 5-10-1988**

Applications are invited in the prescribed forms which can be had from the University Office on payment of Rs. 5/- in Cash or by Indian Postal Order for the following posts so as to reach the undersigned on or before **1-11-1938 :**

Sr. No.	Name of the Post	No. of Post/s	Reservation of posts SC/ST/SEBC	No. of times advertised for Reserved post	Pay Scale
1.	Professor of Chemistry (Polymer/Material Science)	1	—	—	Rs. 4500-7300
2.	Professor of Commerce (Business Management—preferably MBA)	1	—	—	Rs. 4500-7300
3.	Professor of English	1	—	—	Rs. 4500-7300
4.	Professor of USIC	1	—	—	Rs. 4500-7300
5.	Reader in Computer Science (MCA Course)	2	—	—	Rs. 3700-5700
6.	Reader in Animal Science	1	—	—	Rs. 3700-5700
7.	Reader in Chemistry (Physical Chemistry)	1	—	—	Rs. 3700-5700
8.	Reader in English	1	—	—	Rs. 3700-5700
9.	Reader in Commerce	1	—	—	Rs. 3700-5700
10.	Principal, M.B. Patel College of Education	1	—	—	Rs. 3700-5700
11.	Lecturer in Chemistry (Industrial Chemistry)	1	SC/ST	—	Rs. 2200-4000
12.	Lecturer in M.B. Patel College of Education	1	SC/ST	—	Rs. 2200-4000
13.	Lecturer in Mathematics (Candidate with good knowledge of Computer Software will be given preference)	1	SC/ST	—	Rs. 2200-4000
14.	Lecturer in Computer Science (MCA Course)	2	SC/ST	—	Rs. 2200-4000
15.	Lecturer in Library Srience specialized in (i) classification practical (ii) Cataloguing practical	1	SC/ST	—	Rs. 2200-4000
16	Lecturer in Bio-Chemistry	1	SC/ST	—	Rs. 2200-4000
17.	Lecturer in Home Science (Child Development)	1	SC/ST	—	Rs. 2200-4000
	Non-Teaching Posts				
18.	Senior Scientific Officer (Polymer Chemistry)	1	—	—	Rs. 3000-4500
19.	Operator for Electron Microscope	1	—	—	Rs. 2200-4200
20.	Programmer	1	—	—	Rs. 2200-4000
21.	Jr. Technician 'A'	1	—	—	Rs. 1400-2600
22.	Technician Electronics (MCA Course) Temp.	1	—	—	Rs. 1200-2040
23.	Mechanic Attendant	1	SC/ST/ SEBC	—	Rs. 1200-2040
24.	Punch Operator	1	SC/ST/ SEBC	—	Rs. 950-1500

For the post of Professor of Commerce those who have applied in response to earlier advertisement need not apply again.

All the posts except at Sr. No, 22 carry benefits of D.A., G P.F., Gratuity and Pension as per University rules. Post at Sr. No. 22 carries D.A. only. Detailed qualifications will be supplied alongwith the prescribed application forms.

Only SC/ST/SEBC Candidates are eligible for making applications under the reserved category. Candidates belonging to SC/ST/SEBC castes should attach a certificate from the competent authority of the Gujarat State.

Niranjan Upadhyaya
I/c REGISTRAR

UNIVERSITY OF NORTH BENGAL

Applications in prescribed forms are invited from Indian Citizens for the post of Professor at the Centre for Himalayan Studies (Specialisation : Sociology/ Social Anthropology) (Post one) in the. Scale of Pay of Rs. 4500-7300/- with other allowances and benefits as per University rules.

Qualifications : As prescribed by the University Grants Commission. Details of qualifications may be obtained with application forms.

The post is reserved for S.T.

Choice of Selection Committee may not necessarily be confined to those who apply formally. No application except in prescribed application forms will be considered.

Prescribed application forms may be obtained from the office of the Registrar personally on payment of Rs. 3/- in cash at the University Cash Counter or sending a self-addressed envelope of 25x13 cms. affixed with stamps worth Rs. 3/- accompanied by crossed I.P.O./ Bank draft of Rs. 3/- in favour of the University of North Bengal. Filled in application forms (7 copies) alongwith one self-addressed unstamped envelope must reach the office of the Registrar, P.O. North Bengal University, Dist. Darjeeling, Pin : 734430 on or before **15.12.88.**

REGISTRAR

SANJAY GANDHI POST GRADUATE INSTITUTE OF MEDICAL SCIENCES

POST BOX NO. 375, RAE BARELI ROAD, LUCKNOW

CORRIGENDUM TO ADVT. No. 38/88

Reference Advt. No. 38/88 published in these columns on 26.9.88. The following posts of Associate Professors/ Assistant Professors in the prescribed pay scales have been added in the initial advertisement. The qualifications and other conditions remain the same :

Laboratory Medicine

1. Pathology (Preference with sub-specialities in Neuro-pathology, GI Pathology or Renal Pathology)
2. Microbiology
3. Clinical Chemistry (Medical Bio-chemistry).

Last date stands extended to **31st October, 1988.**

Prof. B.B. Sethi
DIRECTOR

SANJAY GANDHI POST GRADUATE INSTITUTE OF MEDICAL SCIENCES

POST BOX NO. 375. RAE BARELI ROAD
LUCKNOW-226 001 (UP)

Advt. No. 40/88 **Last Date : Oct. 31, 1988**

APPRENTICESHIP TRAINING PROGRAMME FOR TECHNICIANS

SGPGI invites applications for selection of Apprentice Technicians for one year training at SGPGI in the following disciplines :

1.	Radiology/Nuclear Medicine	10
2.	Laboratory Medicine	10
3.	Hospital Services	10

Five posts reserved for SC and one post reserved for ST. In case suitable SC candidates are not available the reserved seats will be filled by available ST candidates or vice-versa. In case suitable candidates are not available from these reserved categories vacant seats will be filled up from general list.

ELIGIBILITY

(i) Intermediate (Science) with diploma in relevant fields; or (ii) B.Sc.	With minimum of 55% Marks in aggregate for general candidates and 50% marks for SC/ST candidates.

AGE

Not more than 25 years as on 1st November, 1988 & 30 years for SC/ST candidates.

SELECTION

Through a competitive examination. A written test will be held on December 11, 1988 (Sunday) at SGPGI Campus. The test will comprise of questions on Physics, Chemistry, Biology or Mathematics for the candidates in accordance with their level of eligibility.

STIPEND

A stipend of Rs. 600/- per month will be paid to each trainee for the duration of the training. Each trainee will have to execute an agreement bond with the Institute in the prescribed form.

On successful completion a certificate will be awarded to each trainee.

Candidates should apply on plain paper giving educational qualifications, age, training alongwith certified copies of marksheets and certificates. Incomplete applications will be rejected.

PROF. B.B. SETHI
DIRECTOR

BIOMEET / CEED '89

M. Tech./Ph. D. Programmes in Biomedical Engineering	M. Des. Programmes in Industrial Design and Visual Communication

Date of Examination, Sunday, Feb. 19, 1989
For details and application forms, refer
advertisement dated 1st October, 1988.

Issue of application forms commences—**31-10-1988.**

Chairman
BIOMEET/CEED-89
INDIAN INSTITUTE OF TECHNOLOGY
BOMBAY

DEVI AHILYA VISHWAVIDYALAYA

UNIVERSITY HOUSE, INDORE-425 001

No. Estt/III(12)/88 Dated : 5.10.1988

EMPLOYMENT NOTICE

Applications in the prescribed form obtainable from the University Office on payment of Rs. 5/- in person or by sending Rs. 10/- in the shape of Crossed Indian Postal Order or Demand Draft, payable to the Registrar, Devi Ahilya Vishwavidyalaya, Indore, are invited for the following posts so as to reach the undersigned on or before **18th November, 1988.** Candidates residing abroad can submit their application on plain paper stating full particulars of their qualifications, experience, etc.

S. No.	Department	Professor	Reader	Lecturer
1.	School of Education	1*	1*	3
2.	School of Physics	2*	1*	—
3.	School of Mathematics	—	2*	1*
4.	School of Statistics	—	1*	1*
5.	School of Life Sciences	1*	—	2
6.	School of Chemistry	1*	1*	2
7.	School of Economics	1*	1*	2
8.	School of Bio-Chemistry	1	1*	1*
9.	School of Journalism & Mass Communications	—	2*	—
10.	Academic Staff College	1	1	1
11.	School of Computer Sc. (M.C.A.)	1	2	3
12.	School of Computer Sc. (M.Sc.)	2	2	—
13.	Institute of Management Studies	3	6	3
14.	Computer Centre	Head — 1	System Engg. 1 System Analyst 1*	

2. **Specialisations**

Education : Professor—Educational technology. Reader—Maths-Education/Computer Education. Lecturer—English/Home Science preferred.

Physics : Professor—Material Science/Plasma Physics/Nuclear Physics/Energy Conservation / Thermal Solar Energy Utilization. Reader—Nuclear Physics/Material Science/Energy Conservation/Thermal Solar Energy Utilization.

Mathematics : Reader — Algebra/Geometry

Statistics : Reader—Operation Research/Non parametric Inference. Lecturer—Statistical Inference/Design of experiments.

Life Sciences : Professor—Animal Science / Microbiology / Mammalian Endocrinology/Plant Physiology. Lecturer—Mammalian Reproductive Physiology / Immunology/Plant Molecular Genetics / Entomologists-Plant Insect Interaction/Biotechnology.

Chemistry: Professor—Thermal Analysis/Spectroscopy. Reader — Instrumentation/Organic.

Economics : Professor & Reader—Quantitative Economics & Tribal Economics/Economic Planning & Development.

Bio-Chemistry : Reader—Molecular Biology/Nucleic Acid Bio-chemistry. Lecturer—Enzymology/Molecular Biology/Membrane Biochemistry.

Journalism and Mass Communication: Reader—Mass Communication / Public Relations/Graphic Arts & developmental Journalism (SCs).

Academic Staff College : Specialisation in any branch of Arts/Science/Commerce / Education. Preferable : Experience/aptitude in Academic Administration / Project Management/Education.

M.C.A./M.Sc. Computer Science : Data structures, Theory of Computation and complexity theory. Advanced computer architecture system programming. Software Engineering. Distributed Systems. Distributed data-bases Artificial intelligence.

3. The scales of pay for the above posts and present total emoluments on initial basic salary in each scale are as follows :

Professor/Head Computer Centre :

Rs. 1500-60-1800-100-2000-125/2-2500/- (Rs. 4205/- Approx.)

Reader/System Engg,/System Analyst :

Rs. 1200-50-1300-60-1900/- (Rs. 3775/- Approx)

Lecturer : Rs. 700-40-1100-50-1600/- (Rs. 2575/- Approx.)

4. The revised U.G.C. Pay-Scales will be introduced shortly with retrospective effect.

5. Those who have already applied for the above posts marked (*) only in response to previous Advertisement No. Estt/III(9)/87 dated 20-8-1987 and Advertisement No. Estt/III(1)/88 dated 24-3-1988 need not apply again but they should intimate whether their candidature is to be considered. They may intimate additions, if any, in their qualifications, experience, etc. For remaining posts previous application will not be considered.

6. Application forms together with details of qualifications, specialisation, etc. can be obtained from the University Office on payment of Rs. 5/- in person or by sending a Crossed Indian Postal Order of Rs. 10/- payable to the Registrar, Devi Ahilya Vishwavidyalaya, Indore.

C.P. Modi
REGISTRAR (EXAM)

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UNIVERSITY OF RAJASTHAN

JAIPUR

Advertisement No. 3/88/T/2/69

Dated : 20/22.8.1988

Applications are invited for the undermentioned posts so as to reach this office on or before **31st October, 1988** in the prescribed form obtainable from the office of the Registrar on prepayment of Rs. 6/- (Rs. 8/- extra in case required by post). In the case of persons already in employment the applications must be sent through proper channel.

1. Professors

(Scale of Pay Rs. 4500-150-5700-200-7300)

Economic Administration & Financial Management-1, English-2, Hindi-2, Sufism-1, Jain Studies-1 (Eminence in Prakrit & Jainism), Philosophy-1, Sociology-2, Political Science-1, Geography-1, Tagore Professor in History and Indian Culture-1, Economics-1, Chemistry-4 (Organic-1, Physical-1, Inorganic-2), Zoology-1, Mathematics-2, Physics-1 (Solid State), Statistics-1 (Design of Experiment), Law-1, S.A.P. in Political Science-1 (Political Thought & Institution Structure and Processes in Contemporary Indian Politics), Music-1, Drawing & Painting-1, Gandhian Studies-1.

2. Associate Professors (Readers)

(Scale of Pay Rs. 3700-125-4950-150-5700)

Economic Administration and Financial Management-1, English-3, Hindi-2, Sanskrit-1 (Dharam Shastra/Darshan), Urdu-1, Political Science-2, Public Administration-2, History & Indian Culture-7, (History of Religion/Art & Archaeology-1, Modern History-1, Rajasthan History-1, Ancient History & Indian Culture-2, Gen-2), Library Science-1, S.A.P. in Political Science-2 (Rural Government and Politics-1, Comparative Political Theory-1), Botany-1, Zoology-2, Mathematics-1 (Algebra/Topology) Statistics-1, C.D.P.E.-2, Dramatics-1, Management Studies-1, S.A.S.C.-3 (Political Science-1, Modern History-1 & Economics-1), S.A.P. in Philosophy-3 (Logic-1, Indian Philosophy-1, Shastri Navya Naya/Vyakaran-1), U. L. P. in Political Science-1.

Reservation of Posts

Professors : Mathematics (1 SC), Physics (1 SC), Statistics (1 SC), Law (1 SC), Chemistry (1 SC, 1 ST), English (1 SC), Hindi (1 SC), Sociology (1 SC).

Associate Professors : English (1 SC), Hindi (I SC), Political Science (1 SC), Public Administration (1 SC), History (2 SC, 1 ST) S.A.P. in Political Science (1 SC), Zoology (1 SC), C.D.P.E. (1 SC), S.A.S.C. (2 SC)

Note

1. Details of qualifications etc. will be made available with the application forms.
2. The University reserves the right to increase or decrease the number of posts in any subject depending upon the requirement.
3. Professor in the centre of Jain Studies will also be required to participate in teaching and research work of his own discipline in the concerned Department.
4. The University also reserves the right to consider persons in absentia for the post of Professor even though they have not applied for the post.
5. Applications received on plain paper/after expiry of last date or incomplete applications will be rejected without making any reference.
6. Candidates are required to apply separately for each post on prescribed form.
7. **Applications received against previous advertisements will not be considered.**
8. Retired persons need not apply,

REGISTRAR

UNIVERSITY OF KALYANI

KALYANI, WEST BENGAL

Pin-741235

Adv. No. 5/88 **Dated : 30.9.88**

Application in prescribed form is invited for the post of Computer Science of this University on the scale mentioned below with allowances as admissible under the University rules.

Name of the post : Reader in Computer Science—One post.

Scale of Pay : Rs. 1200-50-1300-60-1900 (to be revised).

Age : Preferably below 50 years.

Qualifications : Reader in Computer Science. (a) A consistently good academic record with 55% marks or B+grade in Master's degree or with equivalent foreign degree, (b) Ph.D. in Computer Science/Computer applications or information system. Or M.Tech/M.E. in Computer Science or Computer applications of information systems. (c) 5 years teaching and/or research experience in the field of computer Science/Computer Applications. (d) **Desirable :** Experience in software Design/system programmes/DBMB.

Applications must be submitted in the prescribed form which may be obtained from the office of the undersigned from 14.11.88 to 5.12.88 personally or by sending self-addressed stamped (Rs. 1.80) envelope (25 cm.×12 cm.) on payment of Rs. 7.50 (charge one-fourth for SC/ST candidates) by current crossed Indian Postal Order in favour of the 'University of Kalyani'. Persons already in employment should apply through proper channel. Applications should be submitted in envelopes superscribed with the name of the post applied for along with attested copies of certificates and mark sheets in respect of all the examinations passed and reprints of publications/books and the same must reach the office of the undersigned on or before **5.12.88.**

ST/SC Candidates must produce documents of caste from the appropriate authority (S D.O.) at the time of collecting forms.

Forms will be distributed between 11-30 a.m. and 3 p.m. on full working days. Candidates called up for interview will have to appear for the same at their own cost.

The principal of reservation of posts for the candidates belonging to scheduled castes and scheduled tribes shall be followed to the extent possible as per orders issued by the State Govt. from time to time.

P. Sircar
REGISTRAR

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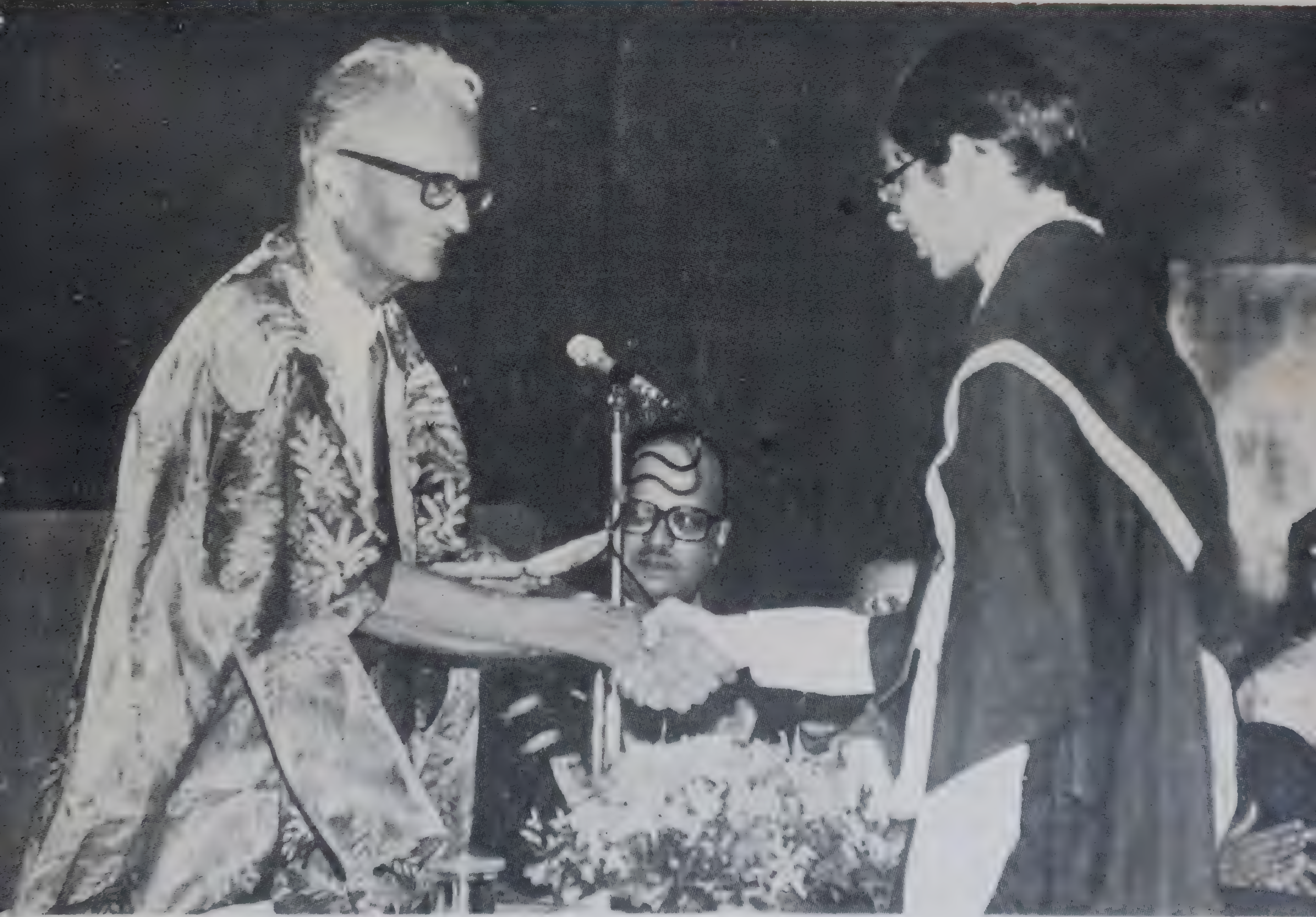

Dr. Malcolm S. Adiseshiah, Chairman, Madras Institute of Development Studies awarding the President of India Medal to Ramane Murthy Venkata Medicherla (B. Tech.) Elect. Engg. student at the 26th Convocation of the Indian Institute of Technology, Bombay.

MOTHER TERESA WOMEN'S UNIVERSITY

KODAIKANAL-624 102

NOTIFICATION NO. 49

Applications in the prescribed form are invited form women candidates in the following posts :

Department	Post	No. of Vacancies
Economics	Professor &	One
	Reader	One
English	Reader	One
Family Life Management	Professor &	One
	Reader &	One
	Lecturer	One
Historical Studies	Reader	One
Sociology	Professor &	One
	Reader	One
Psychology	Professor &	One
	Reader &	One
	Lecturer	One
Assistant Librarian		One

Professor : 1500-60-1800-100-2000-125/2-2500 (UGC—Prerevised)

Qualification

(i) Eminent Scholar with a Doctor's degree and published work of high quality, actively engaged in research;

(ii) Ten years experience of teaching and/or research including guidance at doctoral level and evidence of actively being engaged in Women's Studies; and

(iii) An outstanding Scholar with established reputation who has made significant contribution to knowledge in the specified areas.

Reader : Rs. 1200-50-1300-60-1800 (UGC—Prerevised)

Qualification

(i) Good academic record with atleast high second class Master's Degree in relevant subject with a Doctor's degree or equivalent published work and actively engaged in research; and

(ii) Five years experience of teaching in Undergraduate classes and/or Post Doctoral research work with evidence of published work or research including atleast three years as Lecturer or in equivalent position.

Lecturer : 700-40-1100-50-1600 (UGC—Prerevised)

Qualification

(i) A Doctor's degree or research work of and equally high standard in relevant subject; and

(ii) Consistently good academic record with high second class Master's degree in a relevant subject atleast equivalent degree from an Indian University or a Foreign University.

Provided further that if a candidate possessing a Doctor's degree, or equivalent research work is not available or is not considered suitable, a person possessing good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed on the condition that she will have to obtain a Doctor's degree or give evidence of research of high standard within three years of her appointment failing with she will not be able to earn future increments until she fulfils these requirements.

Assistant Librarian : 700-40-1100-50-1600

Qualification

First or Second Class B.A./B.Sc./B.Com. degree plus a First or Second Class M.Lib.Sc Degree or

First or Second Class M.A./M.Sc./M.Com. degree and a first or second class B.Lib.Sc. or a Diploma in Library Science.

Note

(1) Appointment of persons on deputation will also be considered, if the candidates are found suitable and the employer is aggreeable to spare the services.

(2) The University reserves the right to shortlist the candidates.

(3) The University also reserves the right to fill up or not to fill up the post/posts.

(4) Candidates already in service should send their applications through proper channel or they should produce 'No Objection Certificate' from the employers at the time of interview, if called.

(5) The Selection Committee reserves the right to relax the qualification and experience in exceptional cases.

Application forms will not be sent by post after 7th November 1988 and applications received after 19th November, 1988 will not be entertained.

Applications can be had from the Registrar, Mother Teresa Women's University, Kodaikanal-624102, on requisition accompanied by a Postal Order for Rs. 15/- drawn in favour of the Registrar, Mother Teresa Women's University, Kodaikanal and a self-addressed envelope stamped to the value of Rs. 1.80 paise.

REGISTRAR

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R. I., MYSO

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Editor:
SUTINDER SINGH

Olympiad Perspectives

G. S. Sivia*

If the ancient olympiad was ruined by professionalism and politics posed a serious threat to the modern Olympic Games in the recent times, the new dangers on the horizon are cheating by intake of energy boosting banned anabolic steroids.

Olympiad is an offshoot of religion, a result of Darwinian evolutionary processes which are constantly at work as much in social life as in the organic world. The Olympiad evolved from the religious ceremonies and rituals. Referring to the ancient Greek games, William H. Freeman in his 'Physical Education and Sport in a Changing Society' has rightly stated, "The people had developed rituals for the burial and entombment of the dead, which were similar to the customs of the Egyptians. Games had some religious aspects, for the people also had developed funeral games that were meant to honour the dead. Prizes were given to the winners of contests in foot-racing, boxing, wrestling and chariot races. Most other contests and sports at this time were informal, rather than regularly occurring organized events". Many of the religious festivals celebrated by the Greeks from 1000 to 300 B.C. were generally accompanied by athletic contests, dances and music. During the course of centuries however, games and sports got differentiated from dance and music and culminated into the biggest sports festival formally organised at a frequency of four years. Though definite evidence is not available as to why it began to be called 'Olympiad', it is a common belief that it acquired this nomenclature because of its four-year frequency and the venue of celebration being the foot of the Olympus. Its sacred and holy backdrop is evident from the fact that these games were celebrated as the religious offering to the chief Greek god-Zeus.

The essence of commitment was 'ethics and morality'. The only prize for the winners was the wreath of olive leaves, the warring states signed a treaty (Truce) to stop hostilities for the month of the games, the rules and regulations were traditional and not written, and participation was purely for the love of sports rather than for any monetary gain. Accepting money in return for performance was branded as 'professionalism' and was considered as serious a crime as economic offences in the communistic societies. The raison d'etre of the games has harmony, fraternity and brotherhood. This was in line with the classical Greek philosophy projected through the writings of Socrates, Plato and Aristotle who believed in the harmonious and integrated development of personality through the system of education; and thereby bring about complete harmony in the social order. Games and sports were an important integrated component of this process. This is one perspective of the Olympic Games.

Human frailities are as they are. The Greek culture was overtaken by the Roman civilization founded by shepherds and traders in the surrounding territories of the Mediterranean. It is only psychological that the victor is reactionary against the victim. It was, therefore, natural that the Roman civilization was anti-thesis of the Greek civilization in all spheres of life. In the field of sports, as Melville de Mellow in his

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**Joint Secretary, Association of Indian Universities.*

'Story of the Olympics' has rightly described that they saw little reason in athleticism and they would go to the amphitheatre to watch gladiatorial fights to the death. This emphasis destroyed the moral strength and the religious essence of the games. The degenerated social behaviour of the gladiators, their jealousy and craze to win by all means began to figure in literary works. Euripides in his play 'Autolycus' wrote, "Of all the countless evils throughout Hellas none is worse than the race of athletes." This is another scenario of the Olympiad. It was an obvious corollary that sports and games began to be condemned as mere indulgence of the flesh, deserving all contempt, and unworthy of a respectable place in society. A festival of dignity and honour began to be labelled as a 'pagan spectacle'. The obvious finale was the closure of the Games by a decree of Theodosius II.

The jerk of the nerve-racking shock at the hands of the Romans was so severe that it took fifteen centuries to recoup. The seeds for the revival of the modern Olympics sprouted in the club life of the British Industrial Revolution era. Organised sports began to be played as a leisure time club activity. Sport was no longer considered as a pursuit of the gladiators or a platform to settle old scores by the ruffians of the fifteenth century. Renaissance gave a new dimension to the concept and the contribution of Britain to the growth of modern sport became unparallel. Harold Perkin in his Keynote address to the 8th Commonwealth and International Conference on sport (Glasgo—18th to 23rd July, 1986) made a similar observation that most of the games the world now plays were first organised in their present form by the British in the 19th Century and became an antidote to the savage boisterous free-for-all of the older society in which playing fields were a battle ground of hooligans and bullies.

Nineteenth century was a landmark for the development of organised sports when almost every major modern sport was formalized by refined, codified and standardised rules and regulations and was organised into national and international sport bodies. This environment gave birth to the modern Olympic Games. The pioneer of moulding the idea into practice was the untiring Baron Pierre de Coubertin. Though the 'germination' took place in Britain, the sapling was planted in her neighbourly soil, France. Having known that the Olympiad of the classical period was ruined by professionalism, while working for the revival of the glorious festival, the first thing he did was : introduction of the amateur code. Sports under this umbrella were opened only to those who pursued sports for the love of sports. Another reason for this philosophy was that sport in those days was conceived only as a pastime pursuit. This is yet another scenario of the Olympiad.

The 20th century experienced great scientific developments and their application to industry. It has entirely changed the social complexion—the attitudes, beliefs, outlook on life and its style. Tremendous development of means of transport, mass media, and the telecommunication system has brought the world into a closely knit unit. All these factors have brought about a remarkable change in the field of sports as in any other spheres of life. The growth of urban living, the rise of mass media particularly the television and its coverage of competitive sports in dramatic projections has given a new dimension to spectator entertainment. It is now altogether a different story. Sports like horse races, regattas, athletics, football, baseball, tennis, boxing, swimming, etc., are becoming major spectator sports in the industrialized societies all over the world. Selected popular sports in certain countries of North America, Eastern and Western Europe are becoming opium of the masses—a comment which Karl Marx attributed to religion. Again, because of the role of the media, sport is becoming a big business enterprise. Los Angeles Games registered a net profit of over US $ 200 crores and the Seoul Games of the XXIV Olympiad netted a profit of US $ 349 crores. It is said that in the USA sport is undergoing a great revolution that many sociologists and economists believe will make the Industrial Revolution pale by comparison in its effect on the daily lives of the individuals.

This is an entirely new direction which sports, the roots of the modern Olympiad, are taking. Sport for sport's sake is now only of academic interest. The reality is that it has become a big commercial venture and a tough competition. It is also closely associated with national glories. TIME magazine (Sept. 19, 1988) has aptly described the modern Olympiad as "the best of anything, the best of everything and the best of everyone." This psychology is working in every prospective olympian and this has led to adopting artificial means of boosting up performance. This malpractice became all too apparent at Seoul when as many as nine medal winners were charged of doping and stripped of their medals. This has earned the XXIV Olympiad the epithet 'cheat Olympics'. This indeed is the new danger the Olympiad is facing.

In between, politics and terrorism played its role. The Africans were not in Montreal (1976), the

(*Continued on page 9*)

THE SWISS EDUCATIONAL SYSTEM
A Survey

Esther Garke*

Historical

Swiss education before 1800 developed along much the same lines as that of Central Europe, that is to say : education was first the task of the monasteries, before municipal schools were founded. In the 15th century the first university of our country was founded by the city of Basle (in 1460), while elementary education remained in private hands for still some centuries.

In connection with the political changes brought about by the French Revolution, education was developed on a broader basis. Pedagogists like Pestalozzi gave a decisive impetus to education by opening up primary schooling for wider strata of the population.

A new stimulus to develop also higher education manifested itself in the 19th century, at the same time as the political, liberal forces gathered in order to create the Swiss Confederation. At that time most of our universities were founded, although some of them (e.g. Geneva, Zurich) go back in their origins to theological academies founded during the Reformation.

In the second half of the 19th century and also in the 20th the secondary schools, the vocational schools and the universities underwent important reforms mainly under the influence of the psychological research of the time. Since World War II and the ensuing structural changes in society and industry, the Swiss educational system has continued to experience further alteration.

In the 1960s and early '70s secondary and higher education enjoyed top priority at the national and the cantonal levels as well as in public opinion, inducing a phase of quantitative expansion. This phase of almost unlimited growth has come to an end, mainly—but not exclusively—due to the prevailing financial and economic regression.

Similarly, the endeavours of several cantons to create new institutes of higher education (e.g. at Aarau, specializing in educational science, at Solothurn, for environmental studies, and a new university at Lucerne) have been dimmed. The plans set up in the late 60s and early 70s, have not materialized: The Lucerne project was rejected in a cantonal referendum in 1978, and the other projects were withdrawn by the cantonal authorities for a variety of reasons.

Organization of Education

It is not easy to give a short generalized account of the structure of Swiss education, as the 26 cantonal school-systems differ greatly. A cursory description of the outstanding features of the main stages is the most that can be attempted in a brief paper.

Pre-school Education

Children enter kindergarten at ages varying from four to six according to the canton and the local district; they attend it until they are six or seven. Pre-school education is optional but nonetheless state-run. The infant-teachers are predominantly women; their training at a teachers' training college lasts about two to three years.

Compulsory Schooling

According to the canton, compulsory schooling begins at the age of six or seven and extends over a period of eight or nine years.

Primary schools lasts four, five or six years, depending on the canton. Then the classes are split into two or three streams, into which the pupils are classified taking account of their intelligence on one hand, and their vocational aims on the other.

Thus, *Secondary schools* have various outlooks and open up different ways for vocational or higher training. They all offer at least one foreign language (one of the national languages) and mathematics, history, geography, biology, art, etc.

**Federal Office for Education and Science, Berne.*

Pupils, who leave school at the age of 16, usually move on to a practical apprenticeship with a firm, hospital, post office or local government administration, attending compulsory vocational schools part-time (on average two days a week).

Those who do not take up an apprenticeship can enter a full time vocational school leading to a commercial diploma, or they enter a teachers' training college for infant-or primary teachers. The courses at these schools last some four years.

Upper Secondary Schooling

Most of the grammar schools require a two to four years' preparatory schooling at secondary level. The actual grammar school courses last four or five years, bringing the leaving-age of their pupils up to about 19. In order to obtain the leaving-certificate ("maturity"), the candidates have to pass a final examination which comprises eleven subjects. The Swiss Maturity Regulations distinguish five main types of grammar school training : type A : Latin/Greek (plus mother-tongue, one or two modern languages, mathematics, natural sciences, history, geography, art), type B offering Latin and modern languages (instead of Greek), C, which emphasizes mathematics and natural sciences, and, since 1973, types D (modern languages) and E (commercial, economical). The "maturity"-certificates are at the same time the leaving-certificates of the grammar-schools and certificates giving access to the universities. The above mentioned types of "maturities" are officially recognized by the Confederation, thus setting a comparable standard for the access to universities. This explains why, so far, there has been no need for entrance examinations to universities. The "maturity" certificate is either delivered by a school whose standards are recognized by the Confederation, i.e. by the Federal Maturity Committee, or by the latter, based on centralized exams organized twice a year by the Federal Maturity Committee.

Higher (Tertiary) Education

Switzerland has eight cantonal universities and two Federal Institutes of Technology. Four of the cantonal institutions of higher learning are situated in the German speaking part of Switzerland (Basle, Zurich, Berne and the Graduate School of Economics in St Gall), and four in the French speaking part (Lausanne, Geneva, Neuchatel, Fribourg, the latter being bilingual, i.e. offering courses in French and German). The Polytechnics are located in Zurich and Lausanne, the latter had been part of the University of Lausanne up to 1968, when it was taken over by the Confederation for financial reasons.

Although each university has its own characteristics, they are all basically the same in structure. They are divided in faculties : theology, law, economics and social science, arts, natural science and medicine. Fribourg and Neuchatel offer the basic medical courses only, and St Gall specializes in economics and law. The Polytechnics produce highly qualified engineers, architects and natural scientists.

The teaching at Swiss universities consists of basic studies leading to specialization facilities and post-graduate studies. Considerable differences exist between the various universities and between the fields of study themselves as far as the length of study, the structure of the course, and the selection of combination of subjects are concerned. The basic study, which stretches over at least four years leads to a first academic degree, a "licence" (=M.A., M.Sc.) or a diploma. Its completion allows further specialization in the chosen field of study, leading up to a doctorate.

Alternatives to higher education at the tertiary level are provided by the Advanced Technical Colleges (HTL), corresponding to schools of engineering in France, and the Commercial and Management Colleges. The training at these vocational colleges takes three to three and a half years, and can, as the case may be, lead on to studies at the Federal Institutes of Technology. Another type of higher education is that offered by the various teachers' training colleges.

Characteristic Features

Primary and Secondary School Levels

The principles of compulsory school attendance and of religious tolerance are laid down in the Federal Constitution; but the specific aims of education are laid neither in the federal, nor in cantonal constitutions. These aims are usually mentioned in the prefaces of the various cantonal school-regulations. As a rule, formal and concrete aims of the different schools are comparable, while again in the detail there is a great variety and diversity. Generally speaking, all statements defining the educational objectives stress the development of mind and character, the promotion of knowledge and ability, physical culture and healthy living. Whereas in the 19th century primary education was founded on the principle of making good citizens of the democracy, this aim later receded in view of the increasing subject-matter to be mastered and due to the fast development of science and technology. Today there is a tendency to revive civic and political education and to imbue young people with a sense of responsibility towards society and a spirit of international understanding and cooperation.

One of the reforms, the introduction of co-education, took place in the 1960s and brought about a change in structure as well as the general outlook of the schools.

Since the late 1960s other reforms have taken place; of these *comprehensive education* deserves particular mention. The principal idea behind this attempt is the abolition of the divisions between the various types of schools (secondary-modern, vocational, grammar-schools), in order to facilitate the transfer from one stream into the other, thus providing all children with a fair and comparable chance to reach a higher standard of education. Special coaching-classes enable backward children to catch up. The aim of comprehensive education is to avoid premature decision taking regarding a pupil's future career. It is meant to remove the deficiency of our present system, which asks the pupils—or rather their parents and teachers—to determine their further schooling and thus their profession during their primary or lower secondary school. So far there were only about half a dozen schools which had been run comprehensively for a few years, on a experimental basis; none of the local or cantonal authorities has, however, institutionalized this type of schools.

As far as *teaching methods* are concerned, teachers are free to choose their own. The teachers' associations endeavour to propagate new textbooks and teaching-aids. Group teaching is widely practised. Especially on lower levels, languages are taught by audio-visual means; many schools have a language laboratory at their disposal. Importance is attached to giving lessons an immediate interest and to opening them to a practical, visual approach. This holds particularly for non-grammar-schools, where optional and practical subjects have been introduced with the intention of facilitating the choice of a career (including e.g. practical years, trial apprenticeships).

Owing to an increasing migration of our population within Switzerland. the multiplicity of school systems, curricula, and textbooks constitute a handicap for many children. Both in the German and the French speaking parts of Switzerland attempts by teachers' associations and cantonal directors of the education departments have been made to adjust the requirements and to harmonize the organizations of the school systems. So far the endeavours on a regional basis have been more successful (particularly in Western Switzerland, "L' ecole romande") than those on the national level. Nevertheless the cantonal governments aim at implementing an intercantonal agreement (concordat) on the coordination of the school systems. The concordat urges the cantons to unify at least the school-entrance age (at the age of six years), the duration of compulsory schooling (not less than nine years), and

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the beginning of the school session (in autumn). Furthermore the concordat contains a number of recommendations concerning a general framework for syllabi, common teaching materials, intercantonal recognition of school-leaving certificates, uniform teacher training, et al. The cantons are called upon to co-operate with the federal authorities on educational planning, research, and statistics. Although concluded already in 1970, five cantons have not yet acceded to the concordat, and others have not been able to fulfil all the obligations.

Tertiary Level

Each university is financially and administratively under the department of education of its particular canton; from an academic point of view considerable autonomy is conferred to the university by law. Only the two Polytechnics are wholly maintained by the Confederation; their academic autonomy, however, is also assured.

Clause 27 of the Federal Constitution authorizes the Confederation to establish or maintain institutions of higher learning. Until now it has twice made use of this competence in 1854, when it created the Federal Technical Institute in Zurich, and again in 1968, when it took over the Polytechnical School of Lausanne. For the last 150 years or so it has been urged repeatedly by one canton or pressure group or another to found or take over a university; but so far the cantons have insisted on their prerogative to provide higher education, rejecting any attempt to centralize cultural and educational affairs. The increasing financial squeeze now turns the universities into a burden for the eight cantons and as a result those cantons without a university have to share in the costs at least proportionally to the number of their own students in the cantonal universities. To this effect the cantons signed an intercantonal agreement concerning the financing of the cantonal universities, which was enacted on January, 1, 1981. According to this concordat each canton has to pay a pro rata reimbursement for each of its students who is enrolled at a university of another canton In return, the eight cantons in charge of a university are obliged to waive the limitation of study places (numerus clausus) and to equate its own students with those from the other cantons as far as the free admission to university studies is concerned.

The numbers of student enrolments differ considerably among the ten academic institutions. The largest numbers are found at the University of Zurich (14'786 in 1981), followed by the University of Geneva (10'049); the lowest is at the University of Neuchatel (1'928). In 1980/81 61,374 students were enrolled at the ten universities, 19,915 of whom were girls and 11'728 (19%) foreigners.

It is hoped that a limitation of the student-intake (numerus clausus) can be avoided due to the federal subsidies and the financial contribution of the cantons without a university. So far all applicants who have complied with the enrolment conditions have been granted entry to a university. With the growing number of students, the institutions get increasingly overcrowded, requiring further expansions. Medical students have to accept transfers to a different university than that of their choice, if study places are not available there.

There has been a marked increase in the student body in recent years. Over the span of the last ten years, from 1970 till 1980, the total enrolment has expanded by approximately 50%, i.e. from about 40,000 to 60,000.

Compared to other European countries, the proportion of foreign students at Swiss universities has always been particularly high; it equals about one-fifth of the total student force. The rate varies from one university to the other: foreigners are especially numerous at the French speaking universities (e g. at Geneva: 35% of the total enrolment).

Female students account on average for some 30% of the total enrolment, representing a large increase over the last few years. In this field, too, the share is larger at the French speaking universities of Switzerland than at the German speaking ones.

The breakdown of students by branch of study indicates that over the last decade an increasing percentage of students were studying arts (mainly languages, history, and psychology) and medicine. Law and economics are gaining in popularity.

Educational Administration

Primary and Secondary School Levels

Educational responsibilities at these levels are developed in varying degrees to cantonal and local authorities. There is no national authority or institution which could claim extensive responsibility for educational structures, organization or reforms. Each canton has in its administration a department of education, responsible for its schools, universities, and for further education. Any attempt in the 19th century to create a strong central board of education was rejected by the Swiss people for fear of too strong a central control being foisted upon them. So it is hardly astonishing that only a few clauses relating to education have been incorporated in the Federal Constitution Clauses 27 states that the cantons will provide for adequate primary education, which is to be entirely under state control (cantonal or local). It is compulsory and free of charge in all publicly maintained schools and open to members of all denominations without encroaching upon their freedom of faith and conscience. The organization, direction, and supervision of compulsory schooling remain the concerns of the cantons, though the Confederation contributes to scholarships and other grants. It can also supplement arrangements made by the cantons initiating or supporting measures to further education by means of scholarships and grants. In all cases, cantonal autonomy in educational matters at these levels is to be respected.

The cantonal department of education can devolve competences to a great extent to the local authorities, especially in the sphere of pre-school and primary education. Thus, in accordance with the Swiss political system, school administration is built up democratically from the bottom upwards.

Cooperative forms of administration prevail: The directors of the contonal education departments meet regularly in conference, setting up recommendations for harmonizing the various school systems on a regional if not national basis. The lack of a legislative body entitled to implement educational planning on a national scale highlights the importance of the contacts established on a goodwill basis among the Swiss professional associations such as the Teachers' Association, stidy groups, and intercantonal committees. In this connection mention must be made of the Swiss Educational Documentation Centre at Geneva and the Swiss Central University Office in Zurich, both being joint federal-cantonal institutions.

Tertiary Level

Although the Constitution authorizes the Confederation to set up a federal university in addition to the Federal Technical Institutes, it has so far declined to do so. While the Confederation is giving preference to financing its Institutes of Technology, some of the universities with slimmer cantonal resources encounter increasing difficulty in meeting the requirements of a modern Swiss society. The process of catching up proved particularly difficult to promote in cantons with modest or average financial resources, such as Fribourg. A discrepancy between the progress of the technical studies (at the Federal Institutes) and the classical studies (at the universities) appeared to open up in the early 60s. Since university development is in the national interest, an appeal to the Confederation for financial aid seemed all the more warranted.

Therefore, in 1960 the national Parliament adopted a proposal to draft a bill making provision for federal grants to the cantons in charge of a university, The Federal Department of the Interior, charged to examine this problem, set up a committee of independent experts, and after sounding a number of opinions, the final proposals assumed legal form in 1968 ("Federal Act concerning the financial assistance to the universities" of June 28, 1968, amended on December 17, 1971).

The scheduled aid consists of two types of subsidies:

"*basic grants*" for the operating costs, calculated among other factors on the basis of wage and salary payments to the university staff on scientific, teaching, technical, and administrative levels, with specific amounts allotted for each of three fields of studies (medicine, science, humanities) and per student. The Confederation currently finances up to about 20% on average of the total operating costs of universities in this way;

— "*investment grants*" to help with construction, conversion, building purchases, rents of locations, equipment, scientific instruments etc. The share of investment-expenditure covered by the Confederation reaches 40% of the total in cantons of high financial capacity (e.g. Basle), and 60% in those of low capacity (e.g. Fribourg). If the investment is of national scope, these percentages can be increased.

The Act also provides for grants to certain institutes which, apart from research, offer a special type of university or postgraduate training or provide specialized documentation of a national significance (e.g. the Neuchatel Centre for Educational Research, the Documentation Centre for Social History in Zurich, the Swiss Institute for Art Research, et al.).

Over the first eleven years of federal subsidies to the university cantons (1969-1980), i.e. over three periods of subsidizing, the grants total 2'932 million SFrs., breaking down into 1'682 millions for the operating costs and 1,250 millions for investments. The credits (made up by annual allotments) are granted by Parliament in advanae for a three or four years' period. For the fourth period (1981-1983) 655 million LFrs. were allocated by Parliament for operational grants and 260 million SFrs. for investment grants.

In the past, the institutional framework of higher education was characterized (among other factors) by a certain spirit of competition between neighbouring universities by a fair amount of autonomy in the development of each faculty, by the regional character of each institution. With the rapid economic, financial, social, and scientific changes of the present day, universities need to be coordinated and rationalized to lay stress on the national interests and to husband utilization of resources. To this end also the cantons without a university of their own must share the responsibility.

A number of bodies are actively engaged in promoting this aim on a national scale. The following list contains some of the main organizations for educational matters.

— *The Conference of the Directors of the Cantonal Education Departments*, responsible for primary, secondary and technical schools.

— *The Conference of Swiss University Rectors* maintains inter-university contacts in order to concert the curricula, syllabi, examination rules, and requirements for the various academic degrees—masters' degrees, diplomas, and doctorates—as well as to promote uniformity in the conditions of admission. It promotes exchanges of students and teaching staff here and abroad. The activities of the Conference may be handicapped by the rotation of its members, most rectors being elected but for two or three years.

— *The Swiss University Conference.* Its main function is laid down in clause 19 of the Act on federal grants to universities. It consists in bringing about a cooperation among the universities and tries to implement major reforms relating to academic studies and to the structures of higher education. The Conference participates in examining the cantonal requests for federal subsidies. It is a coordinating organization rather than an authoritative body and represents a forum where the conflicting forces in the university sector can be conciliated and where a compromise is to be found between centralist and cantonal interests. One of its committees promotes the harmonization of the cantonal pluriannual university plans.

— *The Swiss Science Council* constitutes an advisory body to the Federal Council, responsible for the federal science policy; its particular task as decreed in clause 18 of the Act on federal grants to universities is to formulate directives for the development and coordination of the establishments of higher education from a national point of view. It is also involved in examining the cantonal requests for federal subsidies and in advising the Federal Department of the Interior.

The division of responsibilities between the University Conference and the Science Council illustrates one of the original features of the Swiss system. To adjust to modern needs, Switzerland has evolved a new type of "cooperative federalism". Far from denying the existence of internal tensions, it attempts to turn them to advantage by integrating them in the institutional framework.

— *The Federal Office of Education and Science* is part of the Federal Department of the Interior. It was created in 1968, when the Federal Act on the financial assistance to the cantonal universities

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was implemented. It serves as the executive branch of the Government in the field of science policy, including education—as well as research-policy. The office constitutes the administrative counterpart of the advisory bodies, Science Council and University Conference. Based on the recommendations of these two advisory bodies it sets up proposals to be submitted to the Government, the Federal Council, and prepares the bills for approval by the two houses of Parliament. It also assures the implementation of the resulting decisions. To this end the federal office participates—in collaboration with the advisory bodies—in the preparation of the documentation necessary for elaborating concepts, directives and guidelines of the Swiss science policy.

Quaternary Level

For lack of a more concise term "quaternary" education may stand for any form of organized learning after a first period of (compulsory or higher) learning and after having taken up an occupation or profession. It thus includes not only further and recurrent education, postgraduate specialization, and recycling but also the various forms of adult education and, in fact, of life-long learning. Professional and vocational education and recycling are regulated by federal and cantonal laws, while adult education in general is devolved either on the cantons (cantonal laws on the promotion of adult education and culture) or on private, associations (e. g. "popular universities"), churches, political parties, workers' unions, broadcasting and television corporations, etc. Courses by correspondence are offered in fields such as commerce, language, and arts; an Open University does, however, not exist except for a pilot project at the Lausanne Institute of Technology. The Confederation grants financial assistance to some of these, mostly cultural associations by way of its Foundation Pro Helvetia.

Conclusion

The Swiss system of education is marked by a fair amount of diversity and autonomy. The education policy, especially as far as university studies are concerned, has always followed the principle of social demand, providing study-places according to individual request. So far the universities have been in a position to rationalize or expand their capacity and staff in order to meet the needs stemming from the rapid growth of the student body. There has been no real surplus production of academics leading to over-qualified skilled staff or to a considerable number of redundant graduares.

On the level of higher education, the various establishments have more or less complied with local requirements, and these have so far set the trend. The question is now whether the present phase of expansion and progress can be maintained and meet demands adequately without an active cooperation and coordination on a national scale. It has become more and more difficult to tolerate any dispersion of effort under conditions where, in order to husband scarce resources, actions must be channelled in carefully selected directions.

A move into this direction was made in 1973 with a proposed amendment to clause 27 of the Federal Constitution conferring on the Confederation greater authority with a view to promoting an active science—and education policy; the part of the proposal concerning the educational policy was, however, rejected by the Swiss people, while that regarding the research policy was accepted.

Nevertheless, endeavours continue on the present constitutional and legal bases to improve the school system and its organization as well as to redefine the tasks and responsibilities of the universities and to strengthen their management. Events today require each institution of higher education to plan its activities, its staffing, and finances in the light of national if not international strategy. In political terms this calls for a permanently concerted approach by the Confederation and all the cantons, including those without a university of their own. ☐

OLYMPIAD PERSPECTIVES

(*Continued from page 2*)

Americans were absent in Moscow (1980) and, as a reprisal, the Soviets and the Cubans bycotted the games at Los Angeles (1984). Seven Israelies were butchered at Munich (1972). Two great world wars intercepted the Olympics in 1912, 1940 and 1944.

One problem or the other has been itching the pious movement. In the classical period it was professionalism, in the recent times it was politics and now cheating through intakes of 'banned anabolic steroids.' The dangers now on the horizon are the prohibited drugs and the scandalous campaigns which brought Ben Johnson to disgrace and the entire Canadian contingent to disrepute. ☐

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
October 27-29, 1988	National Seminar on Statistics in Medicine, Health and Nutrition.	To discuss Data-Base and Analysis in Health and Nutrition—Present and Future.	Department of Statistics, National Institute of Nutrition, Hyderabad.	Dr. K. Visweswara Rao, Organising Secretary, National Seminar on Statistics in Medicine, Health and Nutrition, Department of Statistics, National Institute of Nutrition, Jamia Osmania, Hyderabad-500 007
October 31-Nov. 4, 1988	Short Term Course on Remote Sensing and Geo-Data Base with Socio Economic Information	To expose the concept of Data Base Approach towards handling and analysing the Remotely Sensed and Land-based Information.	Centre of Studies in Resources Engineering, IIT, Bombay.	Dr. T.V. Pavate Chief Project Engineer, Training Extension and Project Cell, RSD-VI, CSRE, IIT, Bombay-400076
Nov. 17-23, 1988	Laser Workshop for Physicists and Chemists	To enable the young research workers, engineers and teachers to get acquainted with the recent developments in lasers and their application in the fields of spectroscopy and photochemistry.	Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar (M.P.)	Prof. R.S. Kasana, Organising Secretary, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar (M.P.) 470003
December 13-17, 1988	**International Seminar on Education and Training in Water Resources in Developing countries.**	**To assess the requirements of manpower, education and training in Water Resources Sector upto the year 2025 in the developing countries.**	**Central Board of Irrigation and Power, New Delhi.**	**Mr. C.V.J. Varma, Organising Secretary, International Seminar on Education and Training, Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi-110021**
December 15-17, 1988	National Conference on Fluid Mechanics and Fluid Power	To provide a forum for exchange of information on topics in fluid mechanics and design, research and development activities in areas like power generation, aerodynamics, fluidics, biomechanics, etc.	Harcourt Butler Technological Institute, Kanpur.	Dr. N.L. Kachhara, Organising Secretary, 16th National Conference on Fluid Mechanics and Fluid Power, Mechanical Engineering Department, Harcourt Butler Technological Institute, Kanpur-208002

Engineering Industry & Engineering Education

Dr. Malcolm S. Adiseshiah, Chairman, Madras Institute of Development Studies and Former Deputy Director General of Unesco and Vice-Chancellor, University of Madras (1975-78) dwelt at length on "the state of the country's engineering industry—its decelerating production trend, its growing obsolescence, its production—demand mismatch, its escalating costs and its losing out in the international market", while delivering the Convocation Address at the Twenty Sixth Annual Convocation of the Indian Institute of Technology, Bombay. He believed "that engineering education, particularly of our elite institutions such as IITs, holds one of the keys to its restructuration and revival." Excerpts

Convocation

The Engineering Industry

The engineering industry which you have trained yourself to serve occupies a key position in our economy and one which grows in importance with time.

One rather simple evidence of this is the place of engineering in the weight of the industrial production index of the country—which was 8.3 per cent in 1956, moving up sharply to 19.7 per cent in 1960, to 25.91 per cent in 1970 and 30.50 per cent today in 1988. By the end of the century, the engineering industry's weight will be around 35 per cent of the total industrial index taken as 100 in 1980.

A second facet of the engineering industry is its large heterogenity. It is an industrial group comprising three sub groups and 23 industrial products according to the Economic Survey 1987-88 and the Central Statistical Organisation. The result of this diversity and multiplicity is that the generalisations about the engineering industry as a whole, its growth rate, its export performance, its productivity are only of limited value, in being just broad indicators of the reality on the ground. Thus for instance while engineering as an industry in the Planning Commission's input-output model is shown as having a gestation lag of 3 years, and an Incremental Capital Output. Ratio (ICOR) of 4.2, actually in Heavy Engineering the lag is 6 years and ICOR 6.1, in Bokaro, Bhilai and Vizag the lag is 6 to 8 years and the ICOR 7.8. This under estimation of the time lag and ICOR is serious because it leads to under investment which further worsens the two quantities.

A third feature of the engineering industry analysed by sub groups as suggested earlier, is the absence of any relation between the targets of production set for each of them and their actual production in terms of 1970-71 production base of 100. The table (given at the end) brings out this puzzling feature.

There are many comments that engineers could make on the above table the most obvious and important being the lack of any relationship between the targets set for the various engineering sub sectors or production lines and their actual production record. At one end, there are the metal products where the production recorded is about 12 to 40 per cent of the target, and at the other end, there are the transport equipment sub group where production is about equal to the target set. For the engineering sector as a whole the production recorded over the 7 year period of the Sixth Plan and the first 2 years of the Seventh Plan is about 50 per cent of the target. This not only makes a mockery of planning, but is a means of confusing and misleading the engineers and engineering firms. This needs immediate correction.

A fourth feature of the engineeing scene is the rapid rate at which its technology in use is changing. This is seen in part in the number of foreign collaborations approved which was 1024 in 1985, 957 in 1986 and 851 in 1987. The response of our business firms, in both the private and public sectors, to the rapid rate at which technology in their product area is changing is to import such technology from abroad, with little effort either to generate such changes through the country's own R&D, or to develop innovation that will strip, analyse and adapt such imported technology to engineering and technical conditions in the country.

A fifth feature is the declining trend in the rate of growth of engineering production. For the period April-December 1986-87 enginnering production recorded a lower increase of 7.7 per cent compared to the rise of 15.2 per cent during the corresponding period 1985-86. This is attributed to the lower increase in the production of automobiles from 20.3 per cent in 1985-86 to 8.3 per cent in 1986-87, electrical machinery from 34.86 per cent to 27 per cent, as well as the fall in production of electrical fans (from 8.7 per cent to 5.0 per cent between these two years), radio receivers which have been on the decline for the past 3 years, the 1986-87 rate being 8.6 per cent, with similar falling production trends in dry cells, domestic refrigerators, machine tools, agricultural tractors and power transformers. The capital goods sector is typical of the problem that engineering goods face. It is heterogenous, giving rise to diverse problems. Heavy engineering has performed badly because of insufficiency of investment, lack of proper linkages between the users and producers, and insufficient flow of orders. Common to all its sub sectors is the mismatch between supply and demand in the domestic market, which in the case of sophisticated and high precision machinery is met by imports. The tariff policy has the difficult task of balancing the need to provide protection to the indigenous industry, while not raising the cost of capital goods to the user industries, I am mentioning those engineering products and their problems to call your attention and that of other working engineers to these areas which need special attention.

Finally, the deceleration in engineering production is also reflected in the export of engineering goods. The engineering export record is important, because the country relies and will rely increasingly in the future on this area for improving its worrisome deficit trade balance, which was Rs. 8754 crores in 1985-86 and Rs. 7513 crores in 1986-87. (The 1987-88 deficit looks to be similarly large). The engineering sector's share in the country's total exports, which was 7.5 per cent at Rs. 140 crores in 1970-71 shot up to 30.7 per cent at Rs. 918 crores in 1980-81, but since then has been declining steeply to 9.84 per cent in 1985, 9.5 per cent in 1986, and an estimated 9.1 per cent in 1987. This is because our engineering goods are (a) in many cases obsolete, (b) noncompetitive, and (c) because their low value added nature attract more protective measures—that is countervailing duties and anti dumping investigations. The industry's response to this poor export record is to ask Government for more subsidies and CCA, to demand duty free import of capital goods and industrial raw materials as their inputs, and to complain about growing protectionism abroad—which has led the Government to dub engineers and the engineering industry as 'cry babies'. What is needed both for the internal market as well as the foreign market is for the industry to expand its production base and modernise itself. I am not one of those who advises continuing to provide the domestic consumers with outdated and shoddy engineering products, while reserving for US, EEC and other foreign markets high quality and sophisticated goods. Not only is such a distinction between Indian and foreign consumers unjust, it is not viable from a business point of view. The engineering industry can produce and export increasingly quality products for which it has the expertise.

Again as part of this decelerating trend, the share of Indian engineering firms in the $10 billion worth of projects of the Asian Development Bank (ADB) is a low 2.94 per cent. Indian engineering firms made 58 bids in 1985-87 for ADB projects and lost all except one, the exception being BHEL which won the $75 million contract for the North Madras thermal plant. Equally dismal is the record of Indian engineering firms in West Asia, where its share was a satisfactory 67 per cent of the value of all bids as recently as in 1985, but which has dropped to 36 per cent in 1987. Why is there this dismal record when Indian engineering has on the back of it vast expertise, large resources and adequate logistics? Indian engineering firms have lost and are losing in international bidding because (i) of the price factor, the prices that they quote are high in relation to those of price quotations by engineering firms of Japan, South Korea and Taiwan, (ii) of the outdated obsolescent production base from which the Indian firms operate and (iii) (what is even more inexcusable) of their bids not conforming to technical specifications, of failure to submit samples, of the bid being incomplete, or of their inability to meet the agreed delivery periods.

I have dilated at some length on the current state of the country's engineering industry—its decelerating production trend, its growing obsolescence, its production-demand mismatch, its escalating costs and its losing out in the international market, because I believe that engineering education, particularly of our elite institutions such as the IITs, holds one of the keys to its restructuration and revival. Such restructuration is also dependent on Government policy, particularly its industrial development policy on fiscal and import and export policy, an entrepreneurial acumen and ability, and on adequate investment resources.

Engineering Education

Engineering education in the country and in the IITs is provided at two levels—undergraduate and postgraduate. Those two levels need to be looked at separately, to bring about the desired double effects, namley, that of equipping the individual student engineer with the skill he/she needs and in turning out the kind of engineers who can help pull the engineering industry out of its present morass.

A first overall requirement for engineering education is the modernisation of its equipment, which should be done regularly annually. Now for the IITs, the problem of obsolescent equipment has to be dealt with cumulatively, and for it the Nayudamma Committee has recommended a plan allocation of Rs. 100 crores. I was associated with the establishing of this Institute, when in 1958 the Government of India, Unesco and the Government of Soviet Union joined together to start this Institute, and envisaged for it an equipment component of $10 million which commitment was met within a decade. I am of the view that to avoid this kind of cumulative large allocation demand for equipment at a certain point of time,—which is now over 2 decades as far as this IIT is concerned—there should be a 10 year plan broken into 2 five year sub plans coinciding with National Five Year Plan, under which each Annual Plan should contain a provision for replacing and modernising some part of the equipment. This applies to all engineering institutions, with rather large allocations needed for IITs because of their postgraduates and R&D structures.

With regard to undergraduate engineering education, I wish to raise a question, to which I do not know the answer. My question is that given the rapid rate at which technology in industry is changing, is it true that before the 4 years that it takes an undergraduate to complete his/her engineering course, the technology that he/she has learnt in the college is outdated ? If this is true, there are two issues to be faced. The first is whether the engineering undergraduate course should not be limited to learning the basic engineering sciences only, leaving technology learning to be undertaken by the young engineer during his/her employment industry. Second, as a consequence of the first facet, is then 4 years needed for such an undergraduate concentrated courses on engineering sciences ? The Nayudamma Committee states that undergraduate programmes are less flexible than envisaged. I go beyond flexibility to raise questions of the content and duration of the course.

At the postgraduate level there is the question of the relation between what is happening in the Institute and what is happening in the industry. Here there are two problems. The first is the link between the engineering education being imparted at the Institute and the needs of the engineering industry—for modernisation, for marketing expertise, for economy in input costs, for demand assessment and matching production to demand, etc. On this the Nayudamma Committee suggests a regular two way traffic between engineerihg professors in the Institute and the engineers working in the factories and firms. It is surprising that we need a Nayudamma Committee to underline this obvious truth. It is only by every Professor of the Institute spending his sabbatical in an industry, and an engineer in the industry being taken on as an adjunct professor in the Institutes, that the lack on both sides can be filled—the Institute's teaching and learning the means of applying engi-

विद्यार्थियों / अध्यापकों के लिये शुभ संदेश

पठन-पाठन प्रक्रिया में सुविधा के लिये भारतीय विश्वविद्यालय संघ कई वर्षों से स्नातक व स्नातकोत्तर स्तर के विभिन्न विषयों पर अंग्रेजी भाषा में प्रश्न-बैंक प्रकाशित करता रहा है। इन प्रकाशनों में उपलब्ध सामग्री एवं सूचना शिक्षकों एवं विद्यार्थियों के लिये अत्यन्त उपयोगी सिद्ध हुई है।

हिन्दी भाषी प्रांतों के शिक्षकों एवं विद्यार्थियों की लम्बे समय से चली आती मांग को पूरा करने के लिये प्रश्न-बैंकों की इस श्रृंखला को हिन्दी भाषा में प्रकाशित करने का हमारा यह पहला प्रयास निश्चय ही लाभप्रद सिद्ध होगा। इसी आशा के साथ प्रस्तुत है :

जन्तु विज्ञान (Zoology)	मूल्य १२०
रसायन विज्ञान (Chemistry)	मूल्य १६०
वनस्पति विज्ञान (Botany)	(प्रकाशन में)

अधिक जानकारी के लिये लिखें अथवा सम्पर्क करें —

अवर सचिव (प्रकाशन)
भारतीय विश्वविद्यालय संघ
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neering sciences to the condition of Indian industry, and the industry keeping its staff updated in the rapidly moving science and technology of today.

The other problem is the means of closing the gap in the R&D area as between the IITs and the engineering firms. That there is a gap is seen, as noted earlier, in the large and increasing number of foreign collaborations that the industries go in for to meet their need for the required technologies. I am not implying that the R&D at the IITs can stop or sizeably decrease this pathetic reliance on foreign technology. What I am saying is that an engineering firm needing some particular technology should first look for it within the country—at the R&D cells of the IITs, and of course the R&D results of the innumerable national laboratories run by the CSIR. What is needed is a change from the present attitude of industry keeping off IITs research on grounds that it is costly and/or risky, and in place for industry to give IITs (and CSIR laboratories) the first chance for meeting their technology transfer needs. In turn, IITs should engage their R&D work in the task of studying investigating and adapting the technology that is imported into the country first by the public sector enterprises (to be followed by those of the private corporate enterprises) so that the imported technology becomes Indian. For this kind of R&D relationship to develop between IITs and engineering firms, there will have to be a reorientation of the country's industrial development policy and programmes, which will create a demand for IIT generated technology and not just assume as at present that there is an industrial demand for it, which there is not.

IITs should also train their engineers in such simple but precise matters as the techniques of undertaking feasibility and marketing studies so that there is no mismatch between production and domestic and foreign demand, on meeting national and international packaging requirements, on keeping to standards and standing by dead lines—in other words in countering the whole inventory of factors listed earlier, as a result of which Indian engineers are losing out in their bidding for turnkey and other assignments within the country and abroad.

I would like to end by referring to the high regard in which the IIT engineers are held abroad. From Unesco, I used to visit the United States establishments, and everywhere I found that IIT graduates were at work, holding leading and sensitive positions. On one of my visits to the John Kennedy space centre, I had the opportunity to meet some 15 IIT engineers who were engaged in the various Apollo missions, and who were settled there as US citizens, working on other breakthroughs in space research. Here the Nayudamma Committee rightly points out that the technology missions, which we have today concentrated on drinking water, oil seeds, immunisation, literacy and telecommunications, and the various rural development schemes which are aimed to lift the 50 per cent of our fellow countrymen and women (400 million) out of the morass of poverty, provide an even more demanding and attractive challenge to IIT graduates than the Apollo missions, the tasks which Department of Humanities and Social Sciences of the Institute must help its members to realise. ☐

Table 1

Item	Sixth Plan		1985-87		1986-97		(*Apr-Nov) 1987-88	
	Target	Achievement	Target	Achievement	Target	Achievement	Target	Achievement
*All Industries	7.76	5.9	7.8	6.7	7.8	7.8	8	9.2
All manufacturing	7.76	5.0	8.0	6.1	8.0	6.8	8	10.1
Engineering	10.2	5.6	10.5	5.5	10.5	5.8		
Basic metals	10.4	4.7	8.1	6.7	8.1	6.5		
Metals Products	8.20	0.1	8.20	3.9	9.2	3		
Non electrical machinery	10.2	3.6	12.5	6.2	12.5	8		
Transport Equipment	10.15	9.1	10.8	1.0	10.8	10		

*The index for 1987-88 is based on the new index with the base of 1980-82=100

Source : Economic Survey, CSO & CIE

Management Aptitude Testing

The All India Management Association has constituted an Advisory Board for All India Management Aptitude Testing (AIMAT) service under the chairmanship of Dr. Rakesh Khurana, Director, School of Management, Indira Gandhi National Open University (IGNOU). The Board, among other things, will oversee the testing scheme so as to bring uniformity in standards of selection for admission to MBAs of various Indian Universities. The AIMAT scheme, first of its kind, designed and conducted on the lines of GMAT, aims to meet the much felt need for admission to Postgraduate Programmes in Business Administration conducted by Indian Universities and institutions with network of test centres spread all over the country. This will be validated over a regular period of time so as to result in standardised test at par with similar tests in the world.

The first meeting of the Board is scheduled to be held on 29 October, 1988, at New Delhi. Among the important issues, the Board will discuss the design, conduct, evaluation and validation of the test, sharing experience on test constructions with other national and international institutions, Government recognition of the test and long term developmental possibilities of extension of AIMATS to corporate sectors for screening candidates for management and executive trainees.

With the introduction of All India Management Aptitude Test (AIMAT), candidates will no longer have to go through numerous tests in order to get admission into a business administration programme. They will have to appear in one test only, the scores of which will be valid for a number of Universities and Institutions.

Agra Varsity Plans Expansion

Agra University has drawn up elaborate plans for development and expansion. According to Dr. A. P. Mathur, Vice-Chancellor of the University, the new proposals submitted to the UGC included a Rs. 40-lakh project for the Basic Sciences Institute of the University, now coming up on the Kandhari Farm; the development of the Department of History at a cost of Rs. 33 lakhs ; Rs. 20 lakhs for the purchase of equipment for the University Science Departments ; Rs. 12 lakhs for books and periodicals; Rs. 4 lakhs for the library of the Institute of Home Science and Household Arts, and Rs. 25 lakhs for an additional University Girls Hostel.

Dr. Mathur said the University would shortly start a diploma course in journalism and mass media; M. Phil course in English; courses in Tamil and Telugu; a diploma course in Secretarial Hindi; a Chair for studies on the poet Surdas and Sant Sahitya ; as well as diploma courses in electronics, computers and physical education.

All diploma courses would eventually be converted to degree and postgraduate courses, he said. The Vice-Chancellor said that Rs. 29 lakhs were proposed to be spent on the construction of a sports stadium on the Kandhari Farm.

Expressing concern at the attitude of the State Government vis-a-vis projects and grants sanctioned by the UGC, he said it was unfortunate that the State did not provide the matching grant for buildings or assistance for posts sanctioned by the Commission.

In States other than U.P., Bihar and M.P., there were standing orders for approval of all projects sanctioned by the UGC, he said.

The Vice-Chancellor announced that the University also proposed to start an Institute for Mass Communication, to be named after Dorilal Agarwal, founder-editor of the Hindi daily, Amar Ujala.

CIEFL Assigned Nodal Agency Role

The Central Institute of English and Foreign Languages, Hyderabad has been assigned the role of a Nodal Agency in respect of English and Foreign languages by the Ministry of Human Resource Development, Government of India, and the University Grants Commission. Under this scheme the Departments of German and Russian have been assigned a two-year time-bound pilot project. A National Resource-cum-Development Centre (NRDC) has been set up for the creation of common facilities for all the foreign language departments.

The NRDC will collect data regarding the various institutions conducting courses in foreign languages, details of the courses, papers, reports and abstracts of dissertations and theses. The Centre will prepare a directory of Indian experts in foreign languages and also arrange for exchange of publications with similar institutions in India and abroad. Bibliographic services will also be arranged.

The Departments of Russian and German will prepare dictionaries of 3000-5000 words for use by students, as also a conversational, multi-lingual dictionary. Besides organising courses in translation and interpretation, the Departments will also be taking up literary translations from foreign languages into Indian languages. Other projects include : (1) The setting up of a Distance Education Centre for organizing Postgraduate Certificate and Postgraduate Diploma courses in Russian and German and (2) Organisation of need-based courses for various government and non-government agencies.

Electronics Teaching Centre

Mr. K.P.P. Nambiar, Secretary to the Government of India, Department of Electronics recently laid the foundation stone for the establishment of a Teaching Complex of electronics design and technology at the Manipur University. Prof. K.J. Mahale, Vice-Chancellor of Manipur University, who presided over the foundation stone laying function, said that the project cost of Rs. 6.25 crore will be funded by the Department of Electronics, Govt. of India.

Speaking on the occasion, Mr. Nambiar said that Manipur, with its rich cultural heritage, high literacy rate, scenic beauty and abundance of natural resources, had always been in our esteem. Because of the difficult terrain, industrial development based on traditional heavy industries had not taken place in an adequate measure. As a result, the economic progress in the State had been slow. The pollution free environment in the State provided a high potential for developing electronics industry in the State. This could play a significant role in the economic development of Manipur, he added.

Mr. Nambiar further said that the electronics industry in the country had been growing at a rate of around 35 per cent over the last few years. In order to promote rapid growth of electronics industry in the country, several policy measures had already been implemented by Centre.

Poona Varsity Offers Open Education

The Institute of Open Education (IOE), established in the university of Poona by integrating the existing departments' centres of distance and non-formal education is ready with a B.A. and B.Com. programme.

The programme will be offered to those who could not complete their high school education for some reasons but have attained the "Maturity" age of 20 years, according to Vice-Chancellor Prof. V. G. Bhide and former Vice-Chancellor and IOE Chief, Prof. Ram Takawale.

For admission to the B. A./B.Com. programme, the students will have to clear the "entrance test, which consists of three parts of three-hour duration in which a student's knowledge in Marathi, general knowledge and English would be tested.

The entrance test has been slated for January 8 and the late date for submitting forms is December 24.

Combating Malnutrition

Mr. C. Goplan, President of the Nutrition Foundation of India said that scientific research, conducted in the context of the limited available resources, can go a long way in eradicating the problems of malnutrition in the country. Several practical leads for action had been provided through research in the field of human nutrition during the last three decades but were never put to an optimal use. Mr. Goplan was delivering the V.C. Raman medal lecture "Combating malnutrition on practical leads from scientific research in India." The lecture was organised by the Indian National Science Academy (INSA).

He said that the problem of malnutrition was increasing due to growing thrust on urbanisation. He called for finding ways and means to check this problem.

Mr. Goplan added that Indian scientists were finding it hard to do research work on the problems owing to meagre financial allocations for the fields like food preservation. He charged that there was neither political will nor resources to eradicate diseases emanating due to malnutrition. Nevertheless the work done by the scientists on post-harvest and food storage technologies was commendable. Such researches have avoided many health hazards, he said.

He predicted that the nutrition problems would gain added urgency in the coming days and asked the scientists to be prepared to face the challenges which were going to be formidable.

Mr. Goplan was later honoured with the C.V. Raman Medal by the Indian National Science Academy for his contribution in the field of human nutrition. INSA medals were also presented to 14 young scientists for their research works.

The INSA president, Dr. A.S. Paintal, presented each awardee with Rs. 5,000 and a medal at a function to mark the 54th annual general meeting of the academy held in New Delhi.

Dr. Zora Singh, a young scientist awardee also received the Professor I.S.S. Kumar Memorial Award of Rs. 10,000 for his contributions in the field of agricultural sciences.

Dr. E.D. Jemmis, School of Chemistry, University of Hyderabad received the first Anil Kumar Bose Memorial Award for 1988 for his paper on a chemical reaction published in the journal of the American Chemical Society.

The Sir C.V. Raman Gold Medal for outstanding contribution to science went to Dr. C. Gopalan who delivered a lecture on combating malnutrition.

Scientific Imports

The Government of India is reported to have decided to introduce the passbook system for importing equipment, spares and consumables for scientific research. The Department of Science and Technology will be the nodal department to issue passbooks to all public funded research institutions, while the department of education will be the nodal department for universities. Under this system, institutions will be entitled to import equipment and spares upto the aggregate value of Rs. one crore annually, and consumable goods upto Rs. 50 lakh annually.

Course on Food & Nutrition

North Eastern Regional Centre of Indira Gandhi National Open University organised a two-day Orientation Programme on 8th and 9th October, 1988 for the Certificate Course on Food and Nutrition. The course has been launched in the state of Assam, as a pilot programme. For this purpose four Special Study Centres have been established; Two are at Gauhati and Third and Fourth are at Dibrugarh and Jorhat respectively. In all about 12 counsellors participated in the programme. About 185 students have been admitted from different parts of Assam and they will be free to read through Hindi, English or Assamese medium.

Parallel Computer

A team from the Electrical Engineering Department of the Indian Institute of Science (IISc), Bangalore, has built a parallel computer that provides diverse programming capability and the flexibility of using existing computational techniques. It has designed, built and successfully tested a seven processor parallel computing unit called "multimicro", capable of performing a phenomenal seven million instructions per second.

News from Agril. Varsities

AAU Forges Ahead

The Assam Agricultural University (AAU) is reported to be one of the three agricultural universities in the country to be selected by the Government of India for establishing an agricultural bio-technology centre, the other two being the Tamil Nadu Agricultural University and the G.B. Pant University of Agriculture and Technology. According to Dr. P.C. Bora, the Vice-Chancellor of AAU, the Assam Agricultural University has set up a tissue culture laboratory at its Jorhat campus. and a Masters degree course in agricultural bio-technology would be started soon.

The radio tracer laboratory, established on the Jorhat campus in collaboration with the BARC, is designed to facilitate research studies in some of the important disciplines. Atready similar facilities exist at the Khanapara campus of the AAU.

The AAU has recently entered into an agreement with the International Rice Research Institute, Philippines, with the approval of the ICAR, for a collaborative Ph.D. research programme under which the AAU scientists, registering for Ph.D. at the AAU will be sponsored to complete the research part of the programme at the IRRI. For this, necessary fellowship as well as travel grant will be provided to them by the IRRI.

The AAU is setting up an extension education institute to provide institutionalised training in agriculture and allied fields for the entire north-eastern region.

The university has also taken up an ambitious programme for production of breeder seeds (rice, wheat, mustard and vegetables) for facilitating supply of better seeds through multiplied foundation seeds.

Considering the importance of sericulture in improving the farmers' economic condition, the Government of Assam is establishing a college of sericulture at Titabar, under the Assam Agricultural University. The University also proposes to start a college of agricultural engineering at Jorhat soon.

Role of Farm Women

A Seminar on 'Role of Farm Women' jointly organised by the

Punjabrao Krishi Vidyapeeth, Akola and the Maharashtra State Society of Extension Education was recently inaugurated by Prof. (Smt.) Pratibhatai Patil, Vice-Chairman, Rajya Sabha, at the College of Agriculture, Akola, Prof. H.B. Ulemale, Vice-Chancellor of the Punjabrao Krishi Vidyapeeth, presided.

In her inaugural address Smt. Pratibhatai Patil expressed concern about the entire state of affair of women in the country and particularly in villages. She said that women could play pivoal role in agricultural, economic and social development of the country but their participation was not properly recognised. Efforts need be made to realise her contribution with better perspective. Pointing out to the rural scene, Smt. Patil advocated that ceaseless endeavours were needed to educate women so that the villages could be self sufficient with the active participation of women Folk and achieve economic stability.

Prof. H.B. Ulemale, in his presidential address, pointed out that Women share maximum responsibilities in managing household affairs and agriculture, but no realization and recognization had been given to them. But now it has become necessary to know the importance of their contribution. He stressed that if they were properly trained they could do dairy, fisheries, sericulture and other house based industries including mushroom cultivation. For this a short term programme should be organised.

News from UGC

INSAT-1B Programme of UGC

Between Ist November to 15th Nov., 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

1.11.88

"Unravelling the Past—Chemistry Helps in Archaeology"
"Enhancing Creative Thinking-I"
"Non-invasive Diagnosis—I Update on Nuclear Imaging"

2.11.88

"Ramjets—I"
"Ancient Creations—Sinhgad"
"Brain and Nervous System—I"

3.11.88

"Rectifiers"
"Speeches on Speech—III"
"Brown Coal in Rhineland"

4.11.88

"Maths : A Psychological Perspective"
"Public Relations"
"The Pristine Hill Stream"

5.11.88

"Raman's Contribution to Music"
"Glimpses of Puppetry"
"Language—A Golden Key"

6.11.88

No Telecast

7.11.88

"One Language, One World—II A Talk to the World"
"Why the Sky is Blue"
"More Wheat"

8.11.88

"Pinch of Iodine"
"Enhancing Creative Thinking"
"Non-invasive Diagnosis—II New Imaging Techniques"

9.11.88

No Telecast

10.11.88

"Power Supplies"
"Modern Indian Poetry in English"
"Monsoon Circulation in India"

11.11.88

"Mathematics : A Social Perspective"
"In Search of Ethnic Dimensions—I"
"Ecosystems in India : Ecomechanics—I"

12.11.88

"Vision of Nehru"
"Abhinaya"
"Kabuki"

13.11.88

No Telecast

14.11.88

"Optical Illusion—I : Distortion Illusions"
"Four Decades of Planning—Who's responsible"
"Fight Against Hunger—Storage Protection"

15.11.88

"Solar Energy Appliances"
"Enhancing Creative Thinking—III"
"Non-invasive Diagnosis—III Nuclear Medicine"

News from Abroad

CVCP to Monitor Teaching

The Head of the Academic Standards Unit set up by the Committee of Vice-Chancellors and Principals (CVCP) to demonstrate to ministers they are capable of policing their own teaching and to head off outside intervention, has warned that the University departments guilty of consistently poor teaching may be publicly identified. Professor Stewart Sutherland, Principal of King's College, London. who is to head the unit, said : "The time will come when names will be named because universities involved in best practice will wish this to happen."

Vice-Chancellors are under increaseing government pressure to demonstrate publicly that they are capable of policing their own teaching. Mr. Kenneth Baker, Secretary of State for Education, challenged them to provide value for their money. He said the polytechnics and colleges had already shown they could combine a sharp reduction in their unit cost of teaching with an undiminished reputation for its effectiveness. "These institutions will look across to the funding of the universities and ask whether the disparities are in all cases justified by the quality of the research and scholarship that is done." Mr Baker said.

He pointed to the existence in the Netherlands and France of independent inspectorates whose reports were made public. "Should we be envisaging develoments of that sort; or can I rely on the university sector to create systems entirely separate from Government and the funding council which will merit public confidence ?"

So far CVCP reports on universities' procedures for monitoring teaching have not named institutions failing to comply with "best practice". And there is a strong nucleus of resistance to any centrally imposed measures.

This is the Vice-Chancellors' second attempt to improve academic standards. An earlier committee chaired by the former Vice-Chancellor of Lancaster, Professor Philip Reynolds, produced guidelines on external examiners and postgraduate supervision.

Professor Sutherlands admitted that uniform codes were unworkable, but that any systematic publication of data on teaching standards would be open to abuse.

"The unit's reports, which may be published, will show which procedures for monitoring quality are followed where" he said. But if they are used as league tables, we have to be certain they are soundly based. The UGC did not take on the task of evaluating teaching because of its difficulty and the danger of oversimplification".

He said there was evidence that overseas students had been deterred from coming to Britain to research because they had learned from league tables that some institutions were "average".

"The danger with teaching is that league tables assume there is only one good way of doing things; universities teach in a variety of ways. What we want to know is : do they do their way of teaching well".

The unit's first task is to identify which procedures warrant the title 'best practice'. Pressure will be kept up to ensure that reports from external examiners are sent to Vice-Chancellors, for example. Professor Sutherland is convinced that once good procedures are identified or in place the universities themselves will want publicly to distance themselves from defaulters.

Professor Sutherland does not see the need for more external inspection. Large numbers of university courses were already under constant review by the 50 or so professional accrediting bodies like the General Medical Council, the Royal Society of Chemistry and the Law Society.

He also rejected wider use of Her Majesty's Inspectorate. HMI already publish reports on universities' education departments, but they inspect by invitation only and have no right of access. Professor Sutherland said HMI were not set up to inspect teaching to the level achieved in universities. Institutions were also already legally bound under their Charters to teach to a high standard. "No one can take that constitutional responsibility away".

We Congratulate . . . . .

1. **Prof. K. Satchidananda Murty, Vice-Chairman, University Grants Commission on being conferrred the Honorary Professorship of the Chinese Peoples University, Beijing in recognition of his "erudite scholarship and outstanding achievement in the realm of social science".**
2. **Prof. M.M. Sharma of the Department of Chemical Technology, Bombay University on his election as the President of Indian National Science Academy for 1989.**
3. **Prof. M.S. Narasimhan of the Tata Institute of Fundamental Research, Bombay on winning the 1987 mathematics award of the Third World Academy of Sciences, Italy.**

Sambalpur University Hosts East Zone Youth Festival

The first of the four Inter University Zonal Youth Festivals 1988-89 was hosted amidst the sylvan surroundings of the Sambalpur University from October 12-15, 1988. The Inter-University Youth Festivals are organized by the AIU as an annual feature in collaboration with the Department of Youth Affairs & Sports, Government of India. Over 450 delegates from sixteen universities of East Zone participated.

The Youth Festival commenced with a colourful march past with customary dances and music on the university campus. The inaugural function was attended by the students, MLAs, MPs, Press and invited delegates. Mr. Bhupinder Singh, Orissa Minister of State for Information and Public Relations, while inaugurating the Festival said that in spite of the diversity in our national cultures, traditions and languages, this Meet would contribute to the unity and integrity of the nation. He hoped that during their stay at Sambalpur University Campus, the youth from various parts of Eastern India would develop a sense of fellow-feeling and create an atmosphere of rich national traditions. Earlier Prof. B.P. Dash, the Administrator of Sambalpur University welcomed the delegates. Mr. Sampson David, Cultural Officer, AIU acquainted the participants with the main aims and objectives of the Festival. Shri T.B. Susari, Registrar of the host university proposed the vote of thanks.

During afternoon of the opening day, preliminary events of Quiz, Skit, Cartooning and Classical Dance were held at Jyoti Vihar Campus, Veer Surendra Sai Medical College and University College of Engineering respectively. In the preliminary Quiz event four universities, namely, Patna, Sambalpur, Bidhan Chandra Krishi and Orissa University of Agriculture and Technology, were declared qualified for the final round. Three topics i.e. Regional Traffic Control; Smoking is not merely injurious to the individual but also to the society; and the present system of elections were assigned for Cartooning. Balbir Bodh of Viswa Bharati and Sandip Baruah of Assam Agricultural universities exhibited their skill by drawing the most humourous and meaningful cartoons and were declared the winners.

Classical Dances were staged at the College of Engineering. The event opened with the sole male Kathak dancer Tapash Debrath disciple of Guru Bela Arnab of Lucknow Gharana, rendering variegated forms through Shiva Vandana, Thaat, Amad, Paran, Footwork, Tode, Chakradar Bol of 25 rounds, etc. Another piece of Kathak came from Suchitra Manjul of Lucknow Gharana performing Guru Vandana, Thaat, Salami, Tatkaar, Tihai, etc. Swatishree Dash of Berhampur University rendered Odissi, one of the finest forms of Indian Classical Dances, well known for the underlying beauty, poise, grace, rhythm, abhinaya and mudra. Her dance also included the lyric—'*Kahin gale murali phuka*' by Banamali Dash a famous Oriya poet. Suchitra Manjul of Kameshwar Singh Darbhanga Sanskrit University and Swatishree Dash of Berhampur Universities were adjudged the best.

The second day of the Festival witnessed cultural events of Classical Vocal Solo, Instrumental Music, Light Vocal, Western Group Singing, Group Dance and Theatrical items of Mime, Skit and Drama. Various cultural venues were buzzing with exuberance of youthful agility. The V.S.S. Medical College hosted the Mime event in which twelve universities participated. Entries from Rabindra Bharati and Assam Agricultural Universities drew wide acclaim; artistes from Rabindra Bharati presented an item to celebrate 40th anniversary of Indian Independence, paying homage to the patriots who fought for India's freedom; while the Assam Agricultural University's presentation was based on 'Table Tennis'. Both the universities were declared winners.

During the afternoon, Skits were presented at the same venue by the young artistes from nine universities. Rabindra Bharati University again rendered splendid performance on the theme '*Mile Sur Mera Tumhara*'. However, Gauhati and Patna Universities were declared the winners. The event of Classical Vocal Solo was held at the College of Engineering; five universities participated. Marien Vidya Devi of Manipur and Tushar Dutta of Rabindra Bharati Universities gave superb rendition and were declared the winners. Tushar Dutta's raga was based on Yaman with Vilambit—Ek Taal and Drut-Tin Taal.

The One Act Play competition was organised at the VSS Medical College in which several universities put a spectacular show of histrionics. The plays of Manipur and Patna universities received great applause. A new experiment was made by the Manipur University in the field of Theatre to avoid the barrier of language. The production of their piece was based on the expressive elements of dance and other indigenous physical aspects in order to convey the idea that gifts of nature symbolise the richness of our country which should be shared by poor and rich without any difference. Patna University's play was also an experimental one which depicted the pathetic predicament of women in India who from the childhood to maturity are suppressed and harassed in every field be it their education, employment, marriage or social status.

The Light Vocal (Indian) event was organized at the Engineering College where fourteen universities participated—one of the rare items where most of the universities were represented. Maloya Bhowmik of Rabindra Bharati University won the hearts of audience with her ghazal—'*Ro raha hai mera dil koi hansta hai*'. Sumita Garabadu of the Utkal University rendered a mellifluous bhajan with great confidence and clarity. Both these artists were adjudged best for this event.

This event was followed by the Western Group singing in which Rabindra Bharati University and Bidhan Chandra Krishi Vishwavidyalaya proved the best. After this the most spectacular item of the Folk Dances was staged. All the dances were charged with traditional rythm and music. Kalyani University presented the Bangla Lok Nritya, the beauty of which was supplemented by the thrill of the famous Dalkhai Dance of Sambalpur University. Patna and Manipur universities performed the Naga dances whereas Ravishankar University presented the well known Panthi dance of Chhatisgarh. Exquisite performance of Bihu Folk Dance which is connected with the agrarian society with the essence of fertility and joy, came from the Gauhati University. Gauhati and Sambalpur Universities were declared the best.

At the Jyoti Vihar venue the event of Poster Making was held in which twelve teams participated. Topics for this item were Tourism in India, Grow More Food and Welcome to East Zone Youth Festival. Chhatrapati Datta of Viswa Bharati and Subrata Ganguly of Rabindra Bharati Universities were adjudged the best artists for this event. In the final round of the Quiz competition, Sambalpur and Patna Universities claimed the best two positions.

The event of Group Song (Indian) was held at the College of Engineering. The youthful singers of the Dibrugarh University presented the song expressing deep love for motherland with determination to build a new India by uniting people with diverse cultural ties. The Berhampur University's singers pledged to bring about new changes in the society and to build a prosperous, progressive human abode. Both universities were declared the winners in this event.

On the penultimate day of the

INTER-UNIVERSITY YOUTH FESTIVALS 1988-89

Zone	Venues	Dates	Contact Cultural Coordinator
South	Bharathidasan Univ., Tiruchirapalli Tamil Nadu	Oct. 25-28, 1988	Prof. H. Md. Salahudeen NSS Coordinator Bharathidasan Univ. Tiruchirapalli
North	C.S. Azad Univ. of Agriculture & Technology, Kanpur U.P.	Nov. 13-16, 1988	Dr. D.C. Kulshrestha Dean, Students' Welfare C.S. Azad Univ. of Agriculture & Technology Kanpur
West	Devi Ahilya Vishwavidyalaya, Indore (M.P.)	Nov. 20-23, 1988	Dr. R.K. Dubey, Dean, Students' Welfare Devi Ahilya Vishwavidyalaya, Indore
National	Indian School of Mines, Dhanbad	Jan. 31 to Feb. 4, 1989	Prof. R.K.S. Chouhan Dean, Students' Affairs Indian School of Mines Dhanbad

Festival was organised the event of Instrumental Music Solo. Udaya Kumar Mullick of Kameshwara Singh Darbhanga Sanskrit University, Darbhanga and Sudhir Pandey of Patna University were declared the best two in the Percussion Event displaying the artistry of their fingers on Pakhawaj and Tabla respectively. For the non-percussion item, Rishikesh Kumar of Patna and Ranjit Sengupta of Rabindra Bharati Universities were adjuded the best, rendering hypnotic Classical ragaas on violin and sarod respectively. The fine arts event of college was claimed by Subodh Gupta of Patna University and Prasenjit Sengupta of Rabindra Bharati University ; while Ratan Kumar Shah of Rabindra Bharati University and Ashok Kumar of Patna University were declared the best in Clay Modelling.

To extend a literary flavour to the activities of the Youth Festival, a Group Discussion was arranged on the theme—Nehru : Architect of Modern India. The participants spoke well on Pt. Nehru's love and concern for Democratic Socialism, National Integration, Art, Culture, Development, International Peace, etc.

The valedictory function was held at the Jyoti Vihar Campus with Shri Jagunath Dash Mohapatra, Minister of Education, Youth Services & Sports, Orissa as the Chief Guest. He praised the organization of such a gigantic meet and called upon resurgent youth to shape the destiny of the nation.

Patna University were declared the Champions in Indian Music and Theatre; Assam Agricultural University in Western Music; Sambalpur University in Dance, and Literary Event; and Rabindra Bharati in Fine Arts. Rabindra Bharati University also received the Over All Championship.

The first two winners of each event of this Youth Festival would meet again at the Inter-University National Youth Festival to be held at Indian School of Mines, Dhanbad from January 31 to February 4, 1989.

Inter-University Youth Festival (East Zone) 1988-89

RESULTS

No.	Items	Winners
(1)	**Music**	
(a)	Classical Vocal Solo	Mairen Vidya Devi, Manipur University, Manipur. Tushar Dutta, Rabindra Bharati University
(b)	Classical Instrumental Solo (Percussion)	Udaya Kumar Mallik K.S.D.S. University, Darbhanga Sudhir Pandey Patna University, Patna
(c)	Classical Instrumental Solo (Non-percussion)	Rishikesh Kumar Patna University, Patna Ranjit Sengupta Rabindra Bharati University, Calcutta
(d)	Light Vocal (Indian)	Maloya Bhowmik, Rabindra Bharati University. Sunita Garabadu, Utkal University, Vani Vihar.
(e)	Western Vocal (Solo)	Rabi Bhusan Padmadev, Patna University, Patna. Hitendra Narayan Choudhury, Assam Agricultural University.
(f)	Group Song (Indian)	Dibrugarh University, Dibrugarh, Berhampur University, Bhanja Bihar.
(g)	Group Song (Western)	Rabindra Bharati University. Bidhan Chandra Krishi Viswavidyalaya.

No.	Items	Winners
(2)	**Dance**	
	(a) Folk/Tribal Dance	Guwahati University. Sambalpur University.
	(b) Classical Dance	Suchitra Kumari Manjul, K.S.D.S. University, Darbhanga. Swatishree Dash, Berhampur University, Bhanja Biha
(3)	**Literary Event**	
	Quiz	Sambalpur University Patna University
(4)	**Theatre**	
	(a) One Act Play	Manipur University Patna University
	(b) Skits	Guwahati University Patna University
	(c) Mimo	Rabindra Bharati University Assam Agricultural University
(5)	**Fine Arts**	
	(a) On the Spot Painting	Sunil Kumar, Patna University. Radhekrishna Prasad, K.S.D.S. University, Darbhanga.
	(b) Collage	Subodh Gupta, Patna University. Prasenjit Sengupta, Rabindra Bharati University.
	(c) Poster-making	Chhatrapati Dutta, Viswa Bharati, Shantiniketan. Subrata Ganguly, Rabindra Bharati University.
	(d) Clay Modelling	Ratan Kumar Shah, Rabindra Bharati University. Ashok Kumar, Patna University.
	(e) Cartooning	Balbir Bodh, Viswa Bharati, Shantiniketan. Sandip Baruam, Assam Agricultural University.

CHAMPION IN :

Indian Music — Patna University
Western Music — Assam Agril. University
Dance — Sambalpur University
Theatre — Patna University
Literary Event — Sambalpur University
Fine Arts — Rabindra Bharati

OVERALL CHAMPIONSHIP : RABINDRA BHARATI UNIVERSITY

The Institute of Chartered Accountants of India, New Delhi

REQUIRES

1. **Management Trainees** in the Pay Scale of Rs. 2000-3500/Rs. 2200-4000. The qualifications prescribed for recruitment of Management Trainees are as follows :
   - (a) They should be first class graduates with 60% marks in the aggregate in the degree examination.
   - (b) They should have passed the Chartered Accountancy examination in the first attempt.

   The pay scale will be determined depending upon their academic record, experience, personality etc.
2. **Library Assistant** in the Pay Scale of Rs. 1400-2600 with the following qualifications :
   - (a) A graduate with a minimum of 60% marks in the aggregate.
   - (b) A degree in Library Science from a University.
   - (c) A minimum of 3 years experience in a big library.
3. **Law Assistant** in the Pay Scale of Rs. 1400-2600 with the following qualifications :
   - (a) A graduate with a minimum of 60% marks in the aggregate, preferably a **B.Com.**
   - (b) A degree in Law from a University.
   - (c) Should have been in practice for a minimum of three years.
4. **Accounts Assistant** in the Pay Scale of Rs. 1400-2600 with the following qualifications :
   - (a) B.Com. with a minimum of 60% marks in the aggregate.
   - (b) A minimum experience of three years in a large organisation.
5. **Editorial Assistant** in the Pay Scale of Rs. 1400-2600 with the following qualifications :
   - (a) A graduate with a minimum of 60% marks in the aggregate.
   - (b) A degree/diploma in Journalism from a recognised University/Institution.
   - (c) A minimum of three years experience in editing a magazine/newspaper of wide circulation.

The maximum age limit for all the above positions would be 30 years. Other benefits include Dearness allowance, according to Central Government rates, House rent allowance, Transport allowance, Provident Fund, Gratuity, Pension, Medical facility, L.T.C. etc.

Those interested may send their applications within **15 days** giving detailed bio-data to :

Shri M.C. Narasimhan,
Secretary,
THE INSTITUTE OF CHARTERED ACCOUNTANTS OF INDIA
Post Box No. 7100, Indraprastha Marg,
New Delhi-110 002
(Superscribing name of the post applied on the envelope).

DLI—131

SCHOOL OF PLANNING AND ARCHITECTURE

NEW DELHI-110002

SEVENTH
ANNUAL CONVOCATION ON
3rd NOVEMBER 1988, 5.00 P.M.
AT
SCHOOL CAMPUS
Indraprastha Estate
NEW DELHI

BRUNO DIAS SOUZA
DIRECTOR

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A List of Research Scholars Registered for Doctoral Degrees of Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Jamwal, Hardev Singh. *On the principle of exchange of stabilities in some magnetohydrodynamic stability problems.* HP. Dr. M.P. Banerjee, Department of Mathematics, Himachal Pradesh University, Shimla.

2. Samant, Shashank. *Distribution theory.* BHU. Dr. R S. Pathak, Department of Mathematics, Banaras Hindu University, Varanasi.

3. Sharma, Nanak Chand. *Some instability problems in fluid mechanics.* HP. Dr. B.B. Sharma, Department of Mathematics, Himachal Pradesh University, Shimla.

Physics

1. Ahluwalia, Gurinder Kaur. *Amorphous semiconductors (Transport properties).* Delhi. Dr. B.M. Mishra, Department of Physics, Hindu College, Delhi.

2. Ajith Kumar, S. *Electric fields and currents in the ionosphere.* Kerala. Dr. C.A. Reddy, Director, Space Physics Library, V.S.S C. Trivandrum.

3. Chandy, P.S. *Spectroscopic investigation on macromolecules.* Delhi. Dr. Madan Mohan Bajaj, Department of Physics and Astrophysics, University of Delhi, Delhi.

4. Dhaka, Surendra Kumar. *Studies of middle atmospheric winds and waves.* Delhi Dr. O.P. Nagpal, Department of Physics, University of Delhi, Delhi.

5. Dutta, Kuhu. *Investigation of exotic materials with regard to their structural and electrical behaviour.* BHU. Prof. O.N. Srivastava, Department of Physics, Banaras Hindu University, Varanasi.

6. Gandhi, Rekha. *Solid state ionic materials and devices.* BHU. Prof. S. Chandra, Department of Physics, Banaras Hindu University, Varanasi.

7. Guru Prasad. *Superionic glassy/polymeric materials and devices.* BHU. Prof. S Chandra, Department of Physics, Banaras Hindu University, Varanasi.

8. Jain, Sunita. *Electrical and acoustical properties of materials.* Delhi. Prof. Abhai Mansingh, Department of Physics, University of Delhi, Delhi.

9. Shukla, Ravindra Kumar. *Superionic materials and devices.* BHU. Prof. S. Chandra, Department of Physics, Banaras Hindu University, Varanasi.

10. Singh, Arvind Kumar. *Investigation of exotic materials.* BHU. Prof. O. N. Srivastava and Dr. R.S. Tiwari, Department of Physics, Banaras Hindu University, Varanasi.

11. Singh, Indra Bahadur. *Laser spectroscopy of molecules.* BHU. Dr. S.B. Rai, Department of Physics, Banaras Hindu University, Varanasi.

12. Sinha, Ashok Kumar. *Innershell alignment of atoms excited in ion-ion collisions.* BHU. Prof. R.S. Srivastava and Dr. R. Shanker, Department of Physics, Banaras Hindu University, Varanasi.

13. Srivastava, Ajeet Kumar. *Ion beam interaction studies.*

BHU. Prof. A.K. Nigam, Department of Physics, Banaras Hindu University, Varanasi.

14. Srivastava, Mona. *Semiconductor electrolyte interface for solar enerey conversion.* BHU. Prof. S. Chandra, Department of Physics, Banaras Hindu University, Varanasi.

15. Srivastava, Neeti. *Radiation induced inhibition of the expression of L-arabinose operon in Escherichia coli.* BHU. Dr. A.K. Bhattacharya, Department of Biophysics, Banaras Hindu University, Varanasi.

16. Srivastava, Sidhatri Kumar. *Electrical properties of MIS structures.* BHU. Prof. R.S. Srivastava, Department of Physics, Banaras Hindu University, Varanasi.

17. Varma, Ghanshyam Das. *High temperature superconductivity : The* $Tl_2Ba_2CaCu_2O_8$ *system.* BHU. Prof. O.N. Srivastava, Department of Physics, Banaras Hindu University, Varanasi.

18. Venkataraman, S. *A study of bulk and thin films of* $CuInSe_2$ *and its application to MIS and SIS devices.* Hyderabad. Prof. A.K. Bhatnagar.

Chemistry

1. Handa, Sangeeta. *Chemistry of natural products.* Delhi. Dr. S.C. Jain, Department of Chemistry, University of Delhi, Delhi.

2. Haribabu, Eluri. *Photoelectrochemical studies in relation to hydrazine preparation* BHU. Dr. V.B. Singh Department of Chemistry, Banaras Hindu University, Varanasi.

3. Jha, Shiv Kumar. *Spectroscopic characterization of interfaces.* Delhi. Dr. (Mrs) Monika Datta, Department of Chemistry, University of Delhi, Delhi.

4. Khare, Ragini. *Hot atom chemistry.* BHU. Dr. S.P. Mishra, Department of Chemistry, Banaras Hindu University, Varanasi.

5. Malhotra, Varun Kumar. *A study of chemical constituents of medicinal and other plants.* Delhi. Dr. D.K. Bhardwaj, Department of Chemistry, University of Delhi, Delhi.

6. Murali Krishna, Suryadevara. *Molecular structure and intramolecular rearrangement of metal chelates.* BHU. Dr. V.D. Gupta, Department of Chemistry, Banaras Hindu University, Varanasi.

7. Nirmal Pardeep. *Electrochemical and spectroelectrochemical studies of interfaces.* Delhi. Dr. (Mrs) Monika Datta, Department of Chemistry, University of Delhi, Delhi.

8. Parkash. *Metal complexes of glutathione.* Panjab Prof. Gurdev Singh, Department of Chemistry, Panjab University, Chandigarh.

9. Prabhakar, Subhash. *Physiochemical studies of some alkali and alkaline earth cation systems.* Devi Ahilya. Dr. P.V. Khadikar, Prof. and Head, School of Chemistry, Vigyan Bhawan, Khandwa Road, Indore.

10. Sahoo, Prabhat Kumar. *New synthetic methods involving metal ions as reagents and their mechanistic investigations.* Delhi. Dr. J.M. Khurana, Department of Chemisty, University of Delhi, Delhi.

11. Sarcar, Shraboni. *Studies on micellar enzymology.* Delhi. Dr. A.N. Maitra, Department of Chemistry, University of Delhi, Delhi.

12. Satyanarayana, N. *Investigations on the reactivities of organocobalt reagents generated utilizing the* $-CoCl_2$ $NaBH^4$ *system.* Hyderabad. Dr. M. Periaswamy, Department of Chemistry, University of Hyderabad, Hyderabad.

13. Shah, V.G. *Studies in natural product synthesis.* Shivaji. Dr. H.R. Sonawane, Scientist, Organic II Division, National Chemistry Laboratory, Pune.

14. Singh, Shashi Rani. *Organic polyelectrolytes in solution.* BHU. Dr. Bhim Bali Prasad, Department of Chemistry, Banaras Hindu University, Varanasi.

15. Singh, Vinod Kumar. *Synthesis of structural study of biologically active metal chelates.* BHU. Dr. Lallan Mishra, Department of Chemistry, Banaras Hindu University, Varanasi.

16. Srivastava, Nishi. *Conformational studies by NMR spectroscopy.* BHU. Prof. S.M. Verma, Department of Chemistry, Banaras Hindu University, Varanasi.

17. Tiwary, Dhanesh. *Studies on adsorption of ions on metal and metal oxide surface using radiotracer technique.* BHU. Dr. S.P. Mishra, Department of Chemistry, Banaras Hindu University, Varanasi.

18. Verma, Mridula. *Stereochemical studies by NMR spectroscopy.* BHU. Prof. S.M. Verma, Department of Chemistry, Banaras Hindu University, Varanasi.

19. Verma, Ragini. *Studies on heterobimetallic complexes of dithioligands.* BHU. Dr. Nanhai Singh, Department of Chemistry, Banaras Hindu University, Varanasi.

20. Vinod Kumar. *Effect of metalloporphyrins on metabolism of rats.* Delhi. Dr. Ramesh Chandra, Department of Chemistry, University of Delhi, Delhi.

Earth Sciences

1. Anbarasu, K. *Geochemistry and plagiobiology of precambrian sediments.* Delhi. Dr. D.M. Banerjee, Department of Geology, University of Delhi, Delhi.

2. Daya Shanker. *Seismicity studies on Himalayan region.* BHU. Dr. V.P. Singh, Department of Geophysics, Banaras Hindu University, Varanasi.

3. Dorjo, Phunchok. *Geology and geochemistry of the Tso morari crystalline and associated sediments of Ladakh, Jammu and Kashmir, India.* Panjab. Prof. V.J. Gupta and Prof. A.K. Prasad, Department of Geology, Panjab University, Chandigarh.

4. Jha, Bhaskar. *Air pollution.* BHU. Dr. S.N. Pandey, Department of Geophysics, Banaras Hindu University, Varanasi.

5. Mishra, Pradhuman Kumar. *Numerical modelling of seismic structures.* BHU. Dr. Avadh Ram, Department of Geophysics, Banaras Hindu University, Varanasi.

6. Sahami Noshabadi, Habibollah. *A contribution to the geology of Sungri area of Simla District, Himachal Pradesh, India.* Panjab. Dr. R.C. Kanwar, and Dr. Naval Kishore, Department of Geology, Panjab University, Chandigarh.

7. Singh, Prakash. *Coal geology.* BHU. Dr. R.M. Singh, Department of Geology, Banaras Hindu University Varanasi.

8. Singh, Satish Kumar. *Analysis of seismic array.* BHU. Dr. Avadh Ram, Department of Geophysics, Banaras Hindu University, Varanasi.

9. Singh, Shobha- *Structure and evolution of West Bokaro coal field.* BHU. Dr. R.M. Singh, Department of Geology, Banaras Hindu University, Varanasi.

10. Tripathi, Jayant Nath. *Development of software for seismic data processing.* BHU. Dr. Avadh Ram, Department

of Geophysics, Banaras Hindu University, Varanasi.

Engineering & Technology

1. Jain, Prakash G. *Studies on electrical properties of glasses and ceramics containing perovskite oxides.* BHU. Dr. Devendra Kumar, Department of Ceramic Engineering, Banaras Hindu University, Varanasi.
2. Raman Kumar. *Physicochemical investigations on calcium aluminate cement and allied products.* BHU. Dr. V.K. Singh, Department of Ceramic Engineering, Banaras Hindu University, Varanasi.
3. Sawhney, Tilak Raj. *A systematic study on glass ceramic systems.* BHU. Prof. V.C. Joshi, Department of ceramic Engineering, Banaras Hindu University, Varanasi.
4. Singh, Krishna Deo. *Sintering studies in ternary oxide systems.* BHU. Dr. G.N. Agrawal, Department of Ceramic Engineering, Banaras Hindu University, Varanasi.
5. Upadhyay, Kaushal Kumar. *Ganga water pollution by industrial effluents at Kanpur.* BHU. Dr. P.N. Tiwari, Department of Chemical Engineering, Banaras Hindu University, Varanasi.

BIOLOGICAL SCIENCES

Anthropology

1. Guntur, Radha Madhavi Mohan. *Chromosomal abnormalities in couples with repeated spontaneous abortions.* Delhi. Dr. P.K. Ghosh, Department of Anthropology, University of Delhi, Delhi.
2. Harashawaradhana. *Effect of mental retardation on human growth.* Delhi. Dr. M.K. Kumbnani, Department of Anthropology, University of Delhi, Delhi.
3. Kulshreshtha, Nivedita. *Man-machine relationship.* Delhi. Dr. S.L. Malik, Department of Anthropology, University of Delhi, Delhi.
4. Swami, Anju. *Morphophysiological adaptations to deserts.* Delhi. Dr. S.L. Malik, Department of Anthropology, University of Delhi, Delhi.

Biochemistry

1. Jayakumaran Nair, A. *Biochemical studies on the tissue cultures of some medicinal plants.* Kerala. Dr. P.R. Sudhakaran, Reader, Department of Biochemistry, Kariavattom and Dr. J. Madhusoodana Rao, Scientist, Regional Research Laboratory, Trivandrum.
2. Mishra, Krishna Kumar. *Nutritional studies of some leaf protein concentrates.* BHU. Dr. H.P. Pandey, Department of Biochemistry, Banaras Hindu University, Varanasi.
3. Roknabadi, Sadroddin Mohammadi. *Metabolism in germinating seeds.* BHU. Dr. (Mrs) V. Taneja, Department of Biochemistry, Banaras Hindu University, Varanasi.

Botany

1. Daizy Rani. *Phytotoxic properties of Parthenium hysterophorus L.* Panjab. Dr. R.K. Kohli, Department of Botany, Panjab University, Chandigarh.
2. Gupta, Anjali. *In vitro studies on bryophytes.* Delhi. Dr. R.N. Chopra, Department of Botany, University of Delhi, Delhi.
3. Gupta, Neelam. *Effect of heavy metals on cynobacterial N_2-fixation.* BHU. Dr. L.C. Rai, Department of Botany, Banaras Hindu University, Varanasi.
4. Gupta, Rajan Kumar. *Analysis of sample from Maitra Hills.* BHU. Dr. A.K. Kashyap, Department of Botany, Banaras Hindu University, Varanasi.
5. Jain, Nivedita. *Use of enzyme assay to assess fungal contamination in wheat grains.* HS Gour. Dr. P.C. Jain, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.
6. Jain, Rajendra Kumar. *Screening of Sagar market samples of fruits for pesticide residues.* HS Gour. Dr. N.K. Soni and Dr. D.C. Atri, Readers, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.
7. Jain, Sudhir Kumar. *Biodeterioration of timber wood by some fungi.* HS Gour. Dr. S.C. Agrawal, Reader, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.
8. Jawahar, C.R. *Ethnobotany, pharmacognosy and ethnopharmacology of some wild medicinal plants used by tribals of South Kerala.* Kerala. Dr. P.I. Kuriachan, Prof., Department of Botany, University of Kerala, Kariavattom.
9. Malhotra, Shashi. *Half-sib progeny evaluation and study of variation in Acacia catechu Willd from Himachal Pradesh.* Panjab. Prof. P.K. Khosla, Department of Tree Improvement and Genetic Resources, College of Forestry, Solan and Dr. S.P. Vij, Reader, Department of Botany, Panjab University, Chandigarh.
10. Manjit Kaur. *Biochemical studies on some algae of polluted areas.* Panjab. Dr. (Mrs) S. Dua and Dr. A.S. Ahluwalia, Department of Botany, Panjab University, Chandigarh.
11. Mishra, Vinod Kumar. *Mutagenesis in tissue culture system of crop plant.* BHU. Prof. R.M. Singh, Department of Biotechnology, Banaras Hindu University, Varanasi.
12. Navge, Sukhdev. *Hydrobiology of Mansurwari reservoir.* HS Gour. Dr. A.D. Adoni, Reader, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.
13. Rane, M.R. *Physiological studies of leaf development in groundnut, Arachis bypogaea L.* Shivaji. Dr. P.D. Chavan, Reader, Department of Botany, Shivaji University, Kolhapur.
14. Singh, Pramod Kumar. *Microbiology and plant pathology : Ecopathological studies of a Nematode disease with emphasis on microbial interactions.* BHU. Prof. Bharat Rai and Dr. H.K. Singh, Department of Botany, Banaras Hindu University, Varanasi.
15. Singh, Shiv Pratap. *Dynamics of sulphur in soil plant systems with special reference to pulses and oilseeds.* BHU, Dr. A.K. Rai and Dr. R.C. Tivari, Department of Botany, Banaras Hindu University, Varanasi.
16. Singh, Shravan Kumar. *Some agricultural aspects of N_2 fixation.* BHU. Dr. D.N. Tiwari and Dr. B Dhar, Department of Botany, Banaras Hindu University, Varanasi.
17. Srivastava, Amita. *Microbiological studies of spices and similar herbal products' impact on human health.* HS Gour. Dr. P.C. Jain, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.
18. Suhane, Mamta. *Evaluation of antimycoties for some keratinophilic fungi and related dermatophytes.* HS Gour. Dr. S.C. Agrawal, Reader, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.
19. Uma Devi, A. *N_2 fixing cyanobacteria.* BHU. Dr. D. N. Tiwari, Department of Botany, Banaras Hindu University, Varanasi.

20. Verma, Geeta. *Physiological and biochemical studies of some fungi causing mycotic otitie externa.* H.S. Gour. Dr. S.C. Agrawal, Reader, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

Zoology

1. Ajai Kumar. *Studies on systematics and cytogenetics of Dipteran insects.* BHU. Dr. J.P. Gupta, Department of Zoology, Banaras Hiddu University, Varanari.

2. Bhandari, Uma. *Effect of some medicinal plants on lipid, cabohydrate and protein metabolism in experimental animals.* Delhi. Dr. D.N. Prasad, Department of Pharmacy, University of Delhi, Delhi.

3. Bhardwaj, Sushma. *Biology of wooly apple aphid (Eriosoma lanigerum Hausmann) with special reference to gall formation, morph determination and apple varietal resistance.* HP. Dr. Ramesh Chander and Dr. L.R. Verma, Prof., Department of Biosciences, Himachal Pradesh University, Shimla.

4. Chougule, A.K. *Effects of magnetic energy on silkworm development and silk production.* Shivaji. Dr. N.K. More, Department of Zoology, Shivaii University, Kolhapur.

5. Harpreet Kaur. *Studies on the functional morphology, histology and histo-chemistry of male and female reproductive tracts of some parasitic Nematodes.* Panjab. Dr. C.L. Duggal, Reader, Department of Zoology, Panjab University, Chandigarh.

6. Jagjeet Singh. *Faunistic and biometric studies on the fishes of Rajasthan.* Panjab. D. M.S. Johal, Department of Zoology, Panjab University, Chandigarh.

7. Joseph, George. *Studies on the neuroendocrine.* BHU. Dr. K.P. Joy, Department of Zoology, Banaras Hindu University, Varanasi.

8. Narpinderjeet Kaur. *Taxonomic studies of plant parasitic Nematodes of rice.* Panjab. Prof. S. Khera, Department of Zoology, Panjab University, Chandigarh.

9. Phillips, Doris. *Endocrinology of reproduction,* BHU. Dr. C. M. Chaturvedi, Department of Zoology, Banaras Hindu University, Varanasi.

10. Prarad, Sheela. *Reproductive biology.* BHU. Dr. P.L. Pakrasi, Department of Zoology, Banaras Hindu University, Varanasi.

11. Prasad, Shivkant. *Neuroendocrine control of avian reproduction.* BHU. Dr. C.M. Chaturvedi, Department of Zoology, Banaras Hindu University, Varanasi.

12. Rath, Srikanta Kumar. *Mammalian reproduction.* BHU. Dr. S.K. Singh, Department of Zoology, Banaras Hindu University, Varanasi.

13. Ravi Kant. *Certain aspects of histo-physiological studies on reproduction in Indian bugs.* BHU. Dr. D. Kumar, Department of Zoology, Banaras Hindu University, Varanasi.

14. Singhal, Rashmi. *Lipid metabolism in Trichuris globulosa (Nematode).* Panjab. Prof. S. Khera, Department of Zoology, Panjab University, Chandigarh.

15. Srivastava, Anand Shanker. *Biochemical studies of air breathing and non air breathing fresh-water fish.* BHU. Dr. S.N. Singh, Department of Zoology, Banaras Hindu University, Varanasi.

16. Sushil Kumari. *Studies on the effect of embelin, a plant extract of Embelia ribes, on the male reproductive system and liver functions of albino rat.* Panjab. Prof. Usha Kanwar, Department of Zoology, Punjab University, Chandigarh.

Medical Sciences

1. Baljit Kaur. *Skeletal dysplasias : Radiographic observations.* BHU. Dr. S.K. Gupta, Department of Radiodiagnosis, IMS, Banaras Hindu University, Varanasi.

2. Bhattacharya, Visweswar. *Applied anatomy and reconstructive application af fasciocutaneous flaps.* BHU. Prof. J.K. Sinha, Department of Surgery, Banaras Hindu University, Varanasi.

3. Chakraborty, Prasenjeet. *Analysis of biological signals under stressful situation.* BHU. Dr. P.K. Dey, Deyartment of Physiology, Banaras Hindu University, Varanasi.

4. Deshpande, Shripad B. *Role of neuropeptides in spinal reflexes.* BHU. Dr. K.S. Rao, Department of Physiology, Banaras Hindu University, Varanasi.

5. Gangopadhyay, Ajay Narayan. *Study of congenital G.I.T. malformations in children.* BHU. Prof. G.D. Singhal, Department of Surgery, Banaras Hindu University, Varanasi.

6. Gupta, Sanjeev Kumar. *Dysglossias in maxillofacial disorders.* BHU. Prof. J.K. Sinha, Department of Surgery, Banaras Hindu University, Varanasi.

7. Rajkumari. *Isolation, characterization of hepatoprotective, active strains of some herbal drugs and studies of their other pharmacodynamic and toxicological profile.* Delhi. Dr. S.S. Agarwal, Department of Pharmacy, University of Delhi, Delhi.

8. Sharma, Anu Vrat. *Studies on multiple emulsions as potential prolonged release dosage forms of some drugs.* BHU. Dr. B. Mishra, Department of Pharmacology, Banaras Hindu University, Varanasi.

9. Singhal, Sudha. *Studies in ocular toxicology, carbamylating agents-induced changes in lens proteins in experimental models.* Panjab. Dr. M.K.P. Amma, Dapartment of Biochemistry, Panjab University, Chandigarh. Prof. I.S. Jain, Head, Department of Opthalmology, PGI, Chandigarh and Prof. R.N. Chakravorty, Department of Experimental Medicine, PGI, Chandigarh.

10. Srivastava, Rekha. *Physiology of acid-base profiles.* BHU. Prof. S.B. Shukla, Department of Physiology, Banaras Hindu University, Varanasi.

11. Tripathi, Manish. *Neurochemical consequences of stress and anxiety.* BHU. Prof. S.K. Bhattacharya, Department of Pharmacology, Banaras Hindu University, Varanasi.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Shanker, Kusum. *Computational algorithms for global optimization problems and their applications with particular reference to geophysics.* Roorkee.

2. Sinha, Devendra Kumar. *Solution of perturbed system of differential equation and related dynamical system.* Magadh.

Statistics

1. Dutta, Salil Kumar. *Some aspects of discrete distributions.* Gauhati. Dr. S.B. Nandi, Reader, Department of Statistics, Gauhati University, Gauhati.

Physics

1. Abdul Baten Ahmed. *A study of thermally stimulated luminescence in some feldspars.* Manipur. Dr. R.K. Gartia, Assoc. Prof., Department of Physics, Manipur University, Imphal.

2. Bodade, Sushama Vithal. *Thermoluminescence in polymorphic materials.* Nagpur. Dr. B.T. Deshmukh, Department of Physics, Nagpur University, Nagpur.

3. Chakraborty, Nripati. *New studies on structure of air showers in the size range 10^4-10^6 particles.* NBU.

4. Das, Mahadeb. *Parametric instabilities and nonlinear wave interactions in plasmas.* Calcutta.

5. De, Amitabha. *Structure analysis of some organic compounds by X-ray diffraction method.* Calcutta.

6. Ganapati, Vedeshwar Agnikumar. *Transport/optical properties of some semiconducting minerals in bulk and thin film froms.* Karnatak. Dr. A.M. Karaguppikar, Reader, Department of Physics, Karnatak University, Dharwad.

7. Ghosh, Amitabh. *Quanum mechanical tunnelling.* IIT Delhi. D.K. Roy, Department of Physics, Indian Institute of Technology, New Delhi.

8. Kapoor, Pradeep. *Nonlinear vibrations of elastic plates and shells at elevated temperature.* NBU.

9. Karmakar, Sailendra Kr. *On some problems of injection synchronization.* Burdwan. Prof. Baidyanath Biswas, Department of Physics, University of Burdwan, Burdwan.

10. Mahajan, Hemchandra Kanhaiyalal. *Study of physical properties in some thermotropic liquid crystals.* Baroda.

11. Mallappa Jali, Vivekanand. *Transport in quantum well heterostructures.* Karnatak. Dr. B.H. Mulimani, Reader, Department of Physics, Karnatak University, Dharwad.

12. Patel, Minaxi Bhikhubhai. *Optical study of growth, dissolution and microhardness of crystalline materials (gel grown ammonium hydrogen d-tartrate crystals).* Baroda.

13. Sarkar, Samir Kumar. *Fluxes and distributions of cosmic ray extensive air shower components by NBU air shower array.* NBU.

14. Satyanarayana, Anepu Venkata. *Investigations with g-bosons in deformed nuclei.* Andhra.

15. Shukla, Aniruddha Kumar. *Raman study of ion implanted and laser annealed silicon.* IIT Delhi. Prof. K.P. Jain and Dr. S.C. Abdi, Department of Physics, Indian Institute of Technology, New Delhi.

16. Srivastava, Vandita. *Study of proton energy deposition in the earth's polar atmosphere.* Roorkee.

17. Suryaprakasa Rao, Gollapudi. *Structural, magnetic and electrical properties of Fe-B based metallic glasses.* Andhra.

Chemistry

1. Batra, Sulekha. *Kinetics of formation of some complex oxides in solid state and their characterization.* Jammu. Dr. Indu Bhushan, Department of Chemistry, University of Jammu, Jammu.

2. Bharambe, Dinkar Pralhah. *Development and utilization of materials: Some physicochemical aspects of some industrially important flow improvers.* Baroda.

3. Chaudhari, Deoyani Suryakant. *New chelating polymers (resins and membranes).* Baroda.

4. Chaudhuri, Swapan Kumar. *Studies on polycyclic compounds.* Calcutta.

5. De, Kuntala. *Ligating properties of Schiff bases derived from 2-benzoylpyridine.* Burdwan. Prof. Rabindralal Dutta, Department of Chemistry, University of Burdwan, Burdwan.

6. Dhar, Debashis. *Synthesis and applications of inorganic ion exchangers.* Burdwan. Dr. Radhakanta Ghatuary Department of Chemistry, Suri Vidyasagar College, Birbhum.

7. Ghosh Dastidar, Sabitri. *Phytochemical studies on Indian medicinal plants.* Calcutta.

8. Goyal, Rita. *Chemistry and biological activity of terpenoid lactones from Inula racemosa.* PAU.

9. Kadam, Rekha. *Studies on some N-acyl derivatives of hydroxylamines.* Bhopal. Dr. Sushila Pant, Reader, Vikram University, Ujjain.

10. Pandya, H.D. *Study of metal complexes.* Bhavnagar. Dr. S.B. Desai.

11. Patel, Narendrabhai Chandubhai. *Studies in polymers (reactive and masogenic polymers).* Baroda.

12. Pratap, G. *Synthesis, characterization and special applications of novel poly oxoalkyl acrylates.* Osmania.

13. Rajput, Sadhana Jangbahadur. *Exploration of utility possibility of some binary system and homologous series of mesogens.* Baroda.

14. Ramasri, M. *Water soluble polymers for cathodic electrodeposition.* Osmania.

15. Ram Murti. *Thermal decomposition and kinetics of decomposition of some compounds in solid state.* Jammu. Dr. M.L. Koul, Reader, Department of Chemistry, University of Jammu, Jammu.

16. Sakina Khatoon. *Studies on modification of natural triglycerides.* Calcutta.

17. Satyanarayana, B. *Studies on the interaction of O, O-dihydroxy azo dyes with some metal ions in presence of other chelating agents.* Osmania.

18. Sharadanand. *Studies on some inorganic ion exchangers and their applications.* Roorkee.

19. Shirin, Zahida. *Synthesis and characterization of mixed ligands complexes of ruthernium aminopoly carboxylic acids-II-acceptor ligands.* Bhavnagar. Dr. M.M. Taquikhan.

20. Singhai, Neelu. *Studies on zeolites.* H.S. Gour. Prof. S.P. Banerjee, Department of Chemistry, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

21. Singh, Rajkumar Hemkumar. *Reaction of transition metalions with nitrile group in presence of alcohols.* Manipur. Dr. A.K. Manihar Singh, Department of Chemistry, Manipur University, Imphal.

22. Srinivasa Rao, G.S. *Synthesis of Diels-Alder adducts from linseed oil fatty acids : Utility as water soluble polymers,* Osmania.

23. Subramanyan, N.C. *Development of corrosion inhibitors for copper, aluminium and mild steel.* Bangalore. Dr. S.M. Mayanna and Dr. B.S. Seshadri, Department of Chemistry, Central College, Bangalore.

24. Tiwari, Nirupama. *Purification and characterization of L-asparaginase (EC 3.5.1.1.) from Erwinia aroideae NRRLB-138 and active site studies.* IIT Delhi. Prof. R.D. Dua, Ex-Prof. Department of Chemistry, Indian Institute of Technology, New Delhi.

25. Wadhawan, Poonam. *Synthesis and characterization of some trifluoromethanes and paratoluenesulfonates of P-block elements.* Panjab.

26. Zakeeruddin, S.M. *Interaction of transition metals with substituted pyrimidines in aqueous solution and in the solid state.* Osmania.

Earth Sciences

1. Angadi, K.S. *Hydrogeological studies of the lower-parts of Ghataprabha basin, Balgaum and Bijapur District of Karnataka, India.* Roorkee.

2. Bhaumik, Tandra. *Evolution of the precambrians in the area around Santuri, Purulia District, West Bengal with special reference to the economic resources.* Calcutta.

3. Dutta, Indrajit. *Depth of investigation studies in resistivity method for homogeneous and anisotropic earth.* ISM. Prof. B.B. Bhattacharya, Indian School of Mines, Dhanbad.

4. Gupta, Pravin Kumar. *3-D EM modelling using the compact finite element methods.* Roorkee.

5. Kale, Anirudha Wasudeo. *An analytical approach towards better appreciation of the complex kinship in between minerals-in-general and limestone-in-particular of the state of Madhya Pradesh with special stress on their economics of productiveness/consumption patterns.* Nagpur. Dr. N.K. Mohabey, Reader, and Dr. M.B.S. Giri, Department of Geology, Nagpur University, Nagpur.

6. Premakumari, R. *Some aspects of physiology of fish under nutritional stress.* Osmania.

7. Rai, Shayam S *Quantitative interpretation of time domain and multifrequency electromagnetic measurements.* ISM. Prof. B.B. Bhattacharya, Indian School of Mines, Dhanbad and Dr. S K. Verma, NGRI.

8. Rajan, C K. *Studies on some characteristics of Indian rainfall.* CUST. Dr. R. Ananthakrishnan, Scientist, IITM Pune and Dr. K.G. Nair, Head, Department of Electronics, Cochin University of Science and Technology, Cochin,

9. Singh, Anil. *Some trace metals and their size distribution in the atmosphere of Delhi.* JNU. Prof. I.M. Dave, Sr. Fellow, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi.

Engineering & Technology

1. Aggarwal, Satish Kumar. *An analytical appraoch for understanding the phenomenon of warp breakage in weaving.* IIT Delhi. Prof. P.K. Hari, Department of Textile Technology, Indian Institute of Technology, New Delhi and Prof. T.A. Subramanian, ATIRA, Ahmedabad.

2. Biswas, Samita. *Studies on facts in relation to some pharmaceutical aspects.* Calcutta.

3. Deshpande, Ashok Wasudeorao. *Reliability analysis of pumping systems.* Nagpur. Dr. R.N. Ingle, Department of Civil Engineering, Nagpur University, Nagpur.

4. Ghatak, Kamakhyaprasad. *On some electronic properties of degenerate conductors and related phenomena.* Calcutta.

5. Ghosh, Swapan Kumar. *Some problems of hydromagnetic flow in a rotating channel.* ISM. Dr. G.S. Seth, Indian School of Mines, Dhanbad.

6. Jagdeep Singh. *Strength prediction of anisotropic rocks.* IIT Delhi. Prof. T. Ramamurthy and Prof. G.V. Rao, Department of Civil Engineering, Indian Institute of Technology, New Delhi.

7. Kaul, Sanjay. *Investigations on solar collector/storage and space heating options.* IIT Delhi. Dr. S.C. Kaushik, and Dr. N.D. Kaushik, Centre of Energy Studies, Indian Institute of Technology, New Delhi.

8. Keshavaram, B.N. *Preparation and properties of Al-glass and Al-flyash particulate composites.* Kerala. Prof. P.K. Rohatgi, Director Regional Research Laboratory, Bhopal & Dr. K.G. Satyanarayana, Head, Department of Materials, Regional Research Laboratory, Trivandrum.

9. Pandey, Pramod Kumar. *Development of extremely high rate filters.* Roorkee.

10. Prasad, Yenduru Nagendra. *Theoretical and experimental investigations on the performance and emission characteristics of compression ignition engines with biogas substitution.* IIT Delhi. Prof. H,B. Mathur, Department of Mechanical Engineering, Indian Institute of Technology, New Delhi and Dr. M.G. Babu, Centre for Energy Studies, Indian Institute of Technology, New Delhi.

11. Rajagopal, L.R. *Design of maximally flat and monotonic FIR filters using the Bernstein polynomial.* IIT Delhi. Prof. S.C. Dutta Roy and Dr. R.K. Patney, Asstt Prof., Department of Electrical Engineering, Indian Institute of Technology, New Delhi.

12 Rattan, Virender Kumar. *Enthalpies of mixing of organic liquid mixtures.* Panjab.

13. Sarwade, Nisha. *Study of some oxide films for surface passivation of gallium arsenide.* Roorkee.

14. Saxena, Mukesh. *Experimental and analytical studies on stratified charging and selective exhaust gas recirculation in crankcase scavenged two-stroke SI engine for reduction of hydrocarbon emissions and specific fuel consumption.* IIT Delhi. Prof. H.B. Mathur, Department of Mechanical Engineering, Indian Institute of Technology, New Delhi.

15. Sharan, Shivendra Nath. *Design and performance evaluation of linear solar concentrator-photovoltaic systems.* IIT Delhi. Dr. T C. Kandpal, Centre of Energy Studies, Indian Institute of Technology, New Delhi.

16. Sharma, Prabhat Kumar. *Some studies on fibre length attrition during processing and the influence of fibre length distribution on mechanical properties of short glass fibre polypropylene composites.* IIT Delhi. Prof. V.B. Gupta, Department of Textile Technology, Indian Institute of Technology, New Delhi and Prof. R.K. Mittal, Department of Applied Mechanics, Indian Institute of Technology, New Delhi.

17. Singh, Udai Pratap. *Dispersion of conservative pollutants in clear water and sediment laden flows in open channels.* Roorkee.

18. Sukhija, R.P. *Synthesis of path generating mechanisms : Some considerations.* Ravishankar.

19. Venkatraj, R. *Studies in sodium chlorite bleaching.* IIT Delhi. Prof. M.L. Gulrajani, Department of Textile Technology, Indian Institute of Technology, New Delhi.

INDIAN INSTITUTE OF SCIENCE

BANGALORE 560 012

REQUIRES

Post I : **Principal Scientific Officer** (One)
R(IA) 308-40/88 Dt. 7-10-88

Post II : **Senior Scientific Officer** (Four)
R(IA) 308-41/88 Dt. 7-10-88

Post III : **Scientific Officer** (ST-One, Genl-One)
R(IA) 308-42/88 Dt. 7-10-88

Qualifications and Experience :

Post I Essential : Ph.D. in Computer Science/ Elec. Engg/Electronics or equivalent. Atleast 8 years experience in fabricating computer hardware or developing programme in LISP or PROLOG related to AI techniques.

Post II Essential : Ph.D. or M.E. in Computer Science/Elec. Engg/Electronics or equivalent. Atleast three years experience in fabricating computer hardware or developing system software or developing programs in LISP or PROLOG related to AI techniques. In the case of candidates with Ph.D. no experience is required provided their thesis work was in any of the above areas.

Post III Essential : M.E. in Computer Science/ Elec. Engg./Electronics or equivalent. Good knowledge of Computer hardware and software.

Desirable : Experience in fabricating computer hardware or developing system software or knowledge of LISP/PROLOG and AI techniques.

Job Description

Post I : (i) involve in supervising and co-ordinating the activities of a group of technical officers who would be constructing a computing system and developing AL programs and system software for the same. (ii) assist the principal co-ordinator of the project in day-to-day administration of the project.

Post II & III : Involve in the design and fabrication of state-of-the-art computer hardware and software of relevance to fifth generation computers.

Emoluments : Post I : Rs. 5,250/- p.m. in the scale of Rs. 3700-5000

Post II : Rs. 4240/- p.m. in the scale of Rs. 3000-4500

Post III : Rs. 3146/- p.m. in the scale of Rs. 2200-4000

All the posts are in the Knowledge Based Computer System Project in the **Supercomputer Education and Research Laboratory** at the Institute. The appointment is for a period of 5 years. Details and prescribed application forms can be obtained from the Registrar on request (Separately for each post) accompanied by an IPO for Rs. 5/- (free of cost to SC/ST candidates on production of Caste Certificate from a competent authority) drawn in favour of the Registrar, IISc, Bangalore-12, alongwith a self-addressed stamped envelope Rs. 5-40 of the size 28 × 18 cms **on or before 7th November, 1988**.

REGISTRAR

Indian Society for Training & Development

ANNOUNCES

DIPLOMA IN TRAINING & DEVELOPMENT

Recognised by Govt. of India as a Distance Learning (Correspondence) Programme

Over 3000 students enrolled from all over India

XXth BATCH COMMENCING JANUARY, 1989

- The PROGRAMME leads to a recognised qualification for persons aspiring for a rewarding career in Training.
- ELIGIBILITY : Graduates with 2 years' work experience OR Post Graduates in Social Sciences, OR Professionals qualified in other disciplines.
- DURATION : One Year (in 2 Semesters) followed by 6 months' Internship. Maximum permissible period for completing the Course is 4 years.
- Option to attend Tutorials through various ISTD Chapters.
- Semester Examinations held every 6 months in over 21 cities.
- At present, applicants are not required to take an Admission Test.
- For Information Brochure, please send request in writing to the Deputy Director, Diploma Programme, Indian Society for Training & Development, "Training House", B-41, Institutional Area, Mehrauli Road, New Delhi-110016 by sending a self-addressed envelope (size 25 cm x 11.5 cm.) duly stamped (Re. 1). Last date for receiving requests for Information Brochure & Application form : 5th November, 1988 and for submitting completed Application Form : **30 November, 1988**.

National President ISTD : Prof. Vinayshil Gautam and
Chairman ISTD Board of Studies : Prof. B.R. Virmani

CLASSIFIED ADVERTISEMENTS

NATIONAL INSTITUTE OF EDUCATIONAL PLANNING AND ADMINISTRATION

17-B, SRI AUROBINDO MARG,
NEW DELHI-110016

Applications are invited for the following posts :

1. **Senior Fellow (Education Finance)** —One Post
(Rs. 4500-150-5700-200-7300)

Qualifications

Essential

(i) Should have consistently good academic record with first or high second class (B+) Master's degree in Education, Social Sciences or disciplines allied to Educational Planning and Administration of an Indian University or equivalent degree of a foreign university.

(ii) Either a doctorate degree of an Indian or foreign University or published research work of a high standard or outstanding academic contribution in Educational Finance.

(iii) At least 10 years' experience of teaching / conducting and/or guiding research in the area of educational finance. OR At least 10 years' administrative / professional experience at senior level in government or autonomous body in the area of Educational Finance.

Age : Preferably below 50 years.

2. **Fellow (Comparative Education)**
One post upto 15.2.1990 in the first instance
(Rs. 3700-125-4950-150-5700)

Qualifications

Essential

(i) Should have consistently good academic record with first or high second class (B+) Master's degree in Education, Social Sciences, or disciplines allied to Educational Planning and Administration of an Indian University or an equivalent degree of a foreign university;

(ii) Either a doctorate degree of an Indian or foreign university or published research work of a high standard or outstanding academic contribution in Comparative Education with an international perspective;

(iii) At least 5 years' experience of teaching / conducting and/or guiding research in Comparative Education with an international prespective. OR At least 5 years' administrative / professional experience in Comparative Education; and

(iv) Proven merit in writing/editing/documenting professional work.

Desirable

Rich educational background in the area of educational administration and planning.

Age : Below 45 years

3. **Associate Fellow (Educational Planning) One post**
(Rs. 2200-75-2800-100-4000)

Qualifications

Essential

(i) A doctoral degree or equivalent published work with a First or High Second Class Master's degree in Education, Social Sciences of disciplines allied to educational planning and administration or equivalent degree or a foreign University with some experience in the field of Educational Planning.

Age : Below 35 years

Desirable

(i) Capability to write/edit and analyse reports/research papers in the area of educational planning.

(ii) Awareness of computer applications in educational planning.

Age : Below 35 years

4. **Senior Technical Assistant** —One post
(Rs. 1640-60-2600-EB-75-2900)

Qualifications

Essential

(i) Atleast Second Class Master's degree in Education, Social Sciences or disciplines allied to Educational Planning and Administration.

Desirable

5 years' experience in report writing, collection, compilation and analysis of data/material relating to educational planning and administration.

Age : Below 30 years

Note : For the posts of Senior Fellow, Fellow and Associate Fellow the condition regarding Ph.D. will not apply in case of persons drawn from administrative cadres but there should be evidence of academic and innovative contribution in the field of Educational Planning and Administration. It will be open to persons serving in government departments to join the post on usual deputation terms.

All posts carry the usual allowances as are admissible under the Central Government rules. Applications (separate for each post) must be submitted in prescribed form obtainable personally by sending a self-addressed envelope (size 23 × 11 cms.) with postal stamps worth Re. 1/- affixed thereon. Complete application **clearly specifying the post** alongwith attested copies of certificates, a recent passport size photograph and a non-refundable crossed postal order of Rs. 8/- (no postal order is required in the case of Scheduled Castes/Scheduled Tribes candidates) drawn in favour of Registrar, NIEPA, 17-B, Sri Aurobindo Marg, New Delhi-110016, should reach the undersigned latest by **5.12.1988.**

Qualifications and age are relaxable for otherwise well qualified candidates. Caddidates from outside Delhi called for interview will be paid single return train second class fare by shortest route. Candidates already in employment in Government/semi-government Department/Autonomous bodies should send their applications through proper channel. Other things being equal, preference will be given to Scheduled Castes/Scheduled Tribes candidates.

R.P. Saxena
REGISTRAR

ALI YAVAR JUNG NATIONAL INSTITUTE FOR THE HEARING HANDICAPPED

KISHENCHAND MARG, BANDRA RECLAMATION,
BANDRA(W), BOMBAY-400 050

(An Autonomous Registered Society under the Administrative Control of Ministry of Welfare, Government of India).

Invites applications for the following posts as per details given below :

S. No.	Name of the Posts	No. of Posts
1.	Extension Service Officers :	
	(i) Speech & Hearing	1
	(ii) Special Education	1
2.	Lecturer (Audiology)*	1
3.	Research Officer—Unicef** (Lecturer)	1
4.	Asstt. Director (A. Cell)	1
5.	Dy. Engineer	1
6.	Extension Service Assistants :	
	(i) Speech & Hearing	1
	(ii) Special Education	1
	(iii) Clinical Psychology	1
	(iv) Social Work	1
	(v) Mass Media	1
7.	Head Clerk	1
8.	Junior Engineer	1
9.	Clinical Assistant (Psychology)	1
10.	Medical Record Technician	1
11.	Ear Mould Technician	1
12.	Teacher of the Deaf (Unicef Project***)	2
13.	Research Assistant	1

Minimum Qualifications

For Post at Sr. No. 1 : (i) M.Sc. in Audiology/Speech & Language Pathology with 2 years experience in the field.

OR

B.Sc. in Audiology and Speech Pathology with 7 years experience in the field.

Desirable : Ph.D.

(ii) Post-graduate (M.A./M.Sc.) with Diploma/Certificate in Special Education of Deaf with 5 years teaching experience.

OR

Graduate (B.A./B.Sc.) with Diploma/Certificate in Special Education of Deaf with 7 years teaching experience.

Desirable : Ph.D./Ed.D.

For Posts at Sr. No. 2 & 3 : Same as Sr. No. 1 (i) above.

For Post at Sr. No. 4 : Graduate in any faculty with 5 years working experience in any universities, colleges, Training Institutes in the capacity of superintendent or Head Clerk.

For Post at Sr. No. 5 : B.E. Civil with 5 years experience as Dy. Engineer or Asstt. Engineer.

For Posts at Sr. No. 6 : (i) B.Sc. in Audiology and Speech Therapy with five years experience in the field.

(ii) Graduate with Diploma/Certificate in Special Education for the Deaf with 5 years experience in the field.

(iii) M.A. with Clinical Psychology with experience in the field of Hearing handicapped.

(iv) Master of Social Work (MSW) of any Govt. recognised Institute with experience in the field of handling hearing handicapped.

(v) Degree of recognised university and Degree/Diploma in Mass Communication/Journalism.

For Post at Sr. No. 7 : Degree of a Recognised University with at least 10 years experience as U.D.C./Asstt., etc. in the Ministrial line.

For Post at Sr. No. 8 : Diploma in Civil Engineering from an Institute recognised by the Central/State Govt. or equivalent thereof.

For Post at Sr. No. 9 : M.A. in Psychology.

For Post at Sr. No. 10 : Graduate with one year Diploma in Medical Records with 2 years experience.

For Post at Sr. No. 11 : S.S.C. with Dental mechanic certificate or Diploma and 5 years experience in making prosthesis for Denture, speech bulb, Maxillect prosthesis and Ear Mould.

For Post at Sr. No. 12 : Graduate with Degree or Diploma in Education of the Deaf and 2 years teaching experience.

For Post at Sr. No, 13 : Degree in M.S.W. with minimum 2 years experience.

Pay Scales & Total Initial Emoluments as on 1 10.1988.

1. **For Post at Sr. Nos. 1, 2 and 3 :** Rs. 2200-4000/-, Rs. 3,146.00
2. **For Post at Sr. No. 4 :** Rs. 2000-3500/-, Rs. 2, 910.00
3. **For Post at Sr. No. 5 :** Rs. 2000-3200/-, Rs. 2, 910.00
4. **For Post at Sr. Nos. 6 and 7 :** Rs. 1640-2900/-, Rs. 2, 460.00
5. **For Post at Sr. Nos. 8,9,10 and 11:** Rs. 1400-2600/-, Rs. 1,947.00
6. **For Post at Sr. No. 12 and 13:** Rs. 1,500/- consolidated.

*The appointment for the post of Lecturer (Audiology) will be on temporary basis only for a period of 2 years in leave vacancy.

**The appointment for the post of Research Officer which is for UNICEF Project will be on temporary basis for a period of one year only till the Project period.

***The appointment for the post of Teacher for the Deaf and Research Assistant will be on temporary basis for the UNICEF Project for a period of three years.

Out of the 4 Posts at Sr. No. 1, 2 and 3 two posts will be reserved, one each for Scheduled Caste and Scheduled Tribe. One post of Teacher out of two posts at Sr. No. 13 is reserved for Scheduled Tribe. If candidates for reserved posts are not available, they will be filled up by others on year to year basis.

Age Limit

For Post at Sr, No. 1, 2 & 3: Not exceeding 35 years.

For all other posts: Not exceeding 30 years.

Age will be relaxed by Five years in case of Departmental candidates and Scheduled Caste/Scheduled Tribe candidates.

Preference will be given to candidates:

- With Hearing Impairment.
- Sportsmen / Players of National Status.

Candidates employed in Government/Semi-Government service, may forward their applications through proper channel.

Applications giving full details such as Name in full, Postal address, Date of Birth, Educational Qualifications with xerox copies of certificates, details of experience should be forwarded to the Director, Ali Yavar Jung National Institute for the Hearing Handicapped, Opp. Telephone Exchange, K.C. Marg, Bandra Reclamation, Bandra (West), Bombay 400 050, within 15 days from the date of appearance of the Notice in Newspaper. Incomplete applications will not be considered.

MAHARSHI DAYANAND UNIVERSITY
ROHTAK
Corrigendum to Advertisement No. 5/88

"For the post of Reader in Geography candidates with research specialization in any of the following branches may also apply : Quantitative Economic Geography, Behavioural Geography, Humanistic Geography, Biogeography, Environmental Management, and Remotesensing studies."

REGISTRAR

PONDICHERRY UNIVERSITY
PONDICHERRY
Ph.D. Programmes October 1989 Session

Applications are invited for admission into Full-time Ph.D. Study & Part-time (External) Ph.D. programme, in the areas of research under the following disciplines/subjects ;

(a) ENGLISH — (b) TAMIL — (c) FRENCH — (d) SANSKRIT — (e) COMMERCE — (f) HISTORY — (g) ECONOMICS — (h) MATHEMATICS — (i) PHYSICS — (j) CHEMISTRY — (k) BOTANY — (l) ZOOLOGY — (m) ECOLOGY — (n) MANAGEMENT STUDIES — (o) PHYSICAL EDUCATION — (p) PHILOSOPHY — (q) INTERNATIONAL STUDIES.

Candidates with a Master's degree/M.Phil. from Pondicherry University and other recognised Universities with a minimum of 50% of marks or equivalent are eligible to apply.

For the prescribed form of application and other particulars, candidates may write to the Registrar, Pondicherry University, 128, Rangapillai Street, Pondicherry 605 001, with an Indian Postal Order or Demand Draft for Rs. 50/- (Rupees fifty only), drawn in favour of the "Finance Officer, Pondicherry University, Pondicherry" payable at Pondicherry and along with a self-addressed stamped (11 × 23 cm size) envelope for Rs. 7.50/-, clearly mentioning the subject to which the application form is required. Candidates belonging to SC/ST communities are exempted from the payment of the above fees.

Last date for the receipt of filled-in applications is **01.12.1988.**

P.R. Ramanathan, I.A.S.
REGISTRAR

SRI PADMAVATI MAHILA VISVAVIDYALAYAM
TIRUPATI

Advertisement No. SPMVV/D1/MCA/88 **Dated : 12-10-1988**

Applications in the prescribed form are invited from qualified women candidates for the following posts so as to reach the Registrar on or before **15-11-1988.**

Sl. No.	Name of the Post	No. of Vacancies	Scale of Pay
1.	Head of Computer Centre (Systems Manager)	1	Rs. 1100-50-1600
2.	Systems Engineer	1	Rs. 1100-50-1600
3.	Programmers	2	Rs. 700-40-900-EB-40-1100-50-1300.
4.	Computer Operators	2	Rs. 425-15-500-EB-15-560-20-700.
5.	Key Punch Operators	2	Rs. 260-6-290-EB-6-326-8-366-EB-8-390-10-400.
6.	Stenographer.	1	Rs. 1100-40-1500-50-2050.

The prescribed application forms with all particulars such as qualifications prescribed, specialisation required, etc. may be obtained from the Registrar, Sri Padmavati Mahila Visvavidyalayam, Tirupati on payment of Rs. 5/- per Application towards its cost. The amount should be paid by D.D./Postal Order obtained on or after 11-10-88 drawn in favour of the Registrar Sri Padmavati Mahila Visvavidyalayam, Tirupati. Self addressed envelope of Size 27 cm × 12 cm, bearing stamps worth Rs. 2/- should be enclosed by the candidates who desire to get the Application form by post. Seperate Application should be sent for each post. The University reserves the right to fill or not to fill any or all the above posts.

The candidates have to appear for Interview at their own cost when called for. Applications received after due date will not be entertained.

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FD52

17th Nov

University
News

MONDAY, OCTOBER 31, 1988 Rs. 2.50

Dr. P.C. Alexander, Governor of Tamil Nadu, speaking at the 131st annual convocation of the University of Madras. Seated on his left are Shri B. Shankaranand, Union Minister of Law & Justice and Water Resources, who delivered the Convocation Address, and Dr. A. Gnanam, Vice-Chancellor of the University.

Sanjay Gandhi Post Graduate Institute of Medical Sciences

POST BOX NO. 375, RAE BARELI ROAD
LUCKNOW-226 001 (U.P.)

Advertisement No. 44,88

Closing Date : November 15, 1988

SENIOR RESIDENTS

Applications are invited for selection of Senior Residents in the following specialities :

Speciality	D.M./M.Ch.	Vacancies Hospital Service	Total
Neurosurgery	1	2	3
Urology	1	2	3
Gastroenterology (Medical)	1	1	2
Gastroenterology (Surgical)	—	2	2
Endocrinology (Medical)	1	—	1
Nephrology	1	1	2
Medical Genetics	1	1	2
Immunology	1	1	2
Radiology	—	5	5
Pathology	—	6	6
Cardiovascular Surgery	—	3	3
Cardiology	—	5	5
Nuclear Medicine	—	4	4
Neurology	—	3	3
Anaesthesiology	—	4	4
	7	40	47

Note : The number of vacancies for Hospital Services indicated above may increase or decrease at the time of recruitment.

Qualification :

(a) The applicants should possess M.D./M.S. or equivalent recognised Post-graduate qualification in the parent discipline.
(b) The candidates must have registered with Central/State Medical Council.

Upper Age Limit :

Maximum age as on 1-1-1989, 30 years. Relaxable by 5 years for SC/ST candidates.
Age for sponsored candidates can be relaxed.

Reservation :

Reservation for SC/ST candidates exists as per rules. In case candidates belonging to reserved categories are not available vacant seats will be filled from general list.

General Information :

1. Sponsored candidates will also have to appear to Selection Test.
2. No candidate can apply for more than one speciality.
3. The recruitment to the posts will be made on All India basis.
4. The emoluments payable will be in the scale of Rs. 3000—3100-3200 fixed including PGA & NPA.
5. The appointments on these posts will be made on year to year basis for a team not exceeding 3 years.
6. Candidates will be enrolled in D.M./M.Ch. courses subject to clearance by Medical Council of India strictly on merit determined on the basis of selection test which will consist of a written examination followed by practical/clinical test and interview,
7. The test will be held on December 18th, 1988 (Sunday) at S.G.P.G I., Lucknow.
8. Other qualified candidates on merit list will be offered appointments as Senior Residents in the relevant specialities for delivery of hospital services.
9. The merit list will be valid for a period of one year.
10. Candidates are requested to send applications on plain paper latest by **15th November, 1988** stating their date of birth, qualifications with year of passing the examination and marks, experience, names of two referees along with a crossed Bank Draft of Rs. 200/- (two hundred only) payable to "Sanjay Gandhi Post Graduate Institute of Medical Sciences" towards examination fees.
11. Candidates in employment must get their applications duly forwarded.

Prof. B.B. Sethi
DIRECTOR

UNIVERSITY NEWS

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

The Gurukula System of Education

LIBRARY & DOCUMENT
UNIT
17th NOV 1988
C.F.T.R.I. MYS

G.B.K. Hooja*

Mention the word Gurukula and you conjure up the picture of a forest hermitage by the side of a running brook, flanked by high hills, with deer frisking about and lion cubs roaming side by side with cows. It is presided over by an ancient-looking sage with matted hair and a flowing silvery beard, sitting cross-legged on a tiger skin spread on a raised platform, under a banyan tree, expounding the mysteries of the sacred Vedas to a class of brahamcharins, who are simply clad with yellow dhotis round their waists and three cords thrown across their shoulders signifying the protection which they seek to evoke from the three Vedas. These brahamcharins have shaven heads with tufts of hair in the centre and carry wooden staffs for their protection and kamandals for their bhiksha. They walk bare-footed though occasionally for luxury they may wear wooden sandals.

Is it not a charming picture, which may be the delight of caricaturists and cartoonists in modern times ? It would certainly appear to be anachronistic to the modern sophisticated westernised oriental gentleman.

But it surely sums up the aims, ideals and the methodology of the ancient system of education as it prevailed in India in Vedic and post-vedic times.

Firstly, take the locale of the school. Generally, these institutions were situated in forests, which implied intimate contact with nature and tended to develop a sense of harmony with natural surroundings and helped in the inculcation of spiritual values. It developed a sense of intimate relationship between man, beast, birds, trees, mountains and brooks.

Secondly, it emphasised the intimate relationship between the teacher and the pupil. This was, in fact, the essence of the Gurukula system of education. It was teacher-centred and not school-centred as the modern system of education has become. As the child became of school-going age he was required to undergo the ceremony of **Upanayan** which literally means going near (the teacher). He was to be transferred from the house of his parents to the house of his teacher who was supposed to symbolically bear him in his "womb" for three days before he entered upon his formal education. The student was required to become the **anteh-vassi** (resident) of the Gurukula (family of the teacher). He was required to give filial obedience and show due respect and reverence to the teacher. On his part, the teacher was required to bestow paternal affection on the pupil. Aware of his high responsibilities, he was required to so conduct himself as to be able to develop the latent faculties of the student, not only by word of mouth but also by his daily **aacharan** (conduct).

As Vinobaji has often said the word for teacher in ancient literature was **Acharya** and not **Pracharya** as the modern professor would like to call himself. According to the Nirukta, **aacharam graahtiyati aacharyah**: one who trains the pupil in good conduct is the teacher. In ancient

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**Former Vice-Chancellor, Gurukula Kangri Vishwavidyalaya, A-15 A, Vijay Path, Tilak Nagar, Jaipur-302004.*

times the teacher did not merely profess (to know), but he literally practised what he preached and thereby helped to develop the personality of his pupil. In this system of education, a teacher who appears at stated hours to lecture to a class of students whom he knows by roll numbers only and is not readily available at all times to answer their questions, quell doubts and render advice regarding all the problems under the sun becomes anomalous. Given such a teacher, how can a student go astray ? How can there be a generation gap ?

The third characteristic of this system of education was its austerity and simplicity of life. Away from the distracting influences of the city life, far from its maddening crowds, its din and dust, the pupil was required to lead a simple and disciplined life. Shave a man's head and he automatically becomes humbler in the presence of his viewers. Believe it or not, it is a veritable psychological phenomenon. Dandyism quits, leading to an internal transformation. The student was required to do all the household chores for his teacher and for the ashrama, e.g., to fetch water from the brook, to cut wood, to beg food, to look after the house, to plant and water trees, to keep the premises clean and tidy, etc. He was supposed to rise with the break of the day and had a systematic and well-laid out schedule of duties to be performed during the course of the day. Emphasis was laid on the development of qualities of hardihood and endurance, on **tapas**. In the Brahamcharya Sukta of the Atharva Veda the word **tapas** occurs 15 times in 26 verses. It is also noteworthy that there was no distinction between the sons of the rich and the poor. They were students of the same **guru** and all stood on equal footing. Thus the Gurukula system of education inculcated on the one hand a spirit of discipline while on the other hand it isolated the students from the distinctions based on the caste, creed or birth. On graduation, of course, the students were classified according to their abilities and character and entered upon the appropriate class in accordance with the **Varnashrama vyavastha**. But as long as they remained at the school there was no such distinction.

The question arises whether we can adopt this way of life in modern times ? Surely while we may not insist on shaving of heads, there can be no two opinions about subjecting the students to a Spartan and disciplined way of life. There would also be general agreement that the students may be encouraged to look after their own hostels, premises, kitchens, gardens, and even school buildings. In this way they will tend to develop a sense of involvement in their immediate environment. This will in turn lead to the fostering of a sense of commitment to societal needs which is unfortunately so glaringly lacking in modern individualistic societies. Exactly something similar was recommended by Rousseau centuries later for the education of a youngman. I quote :

> "Emile must also learn a trade less for the learning of it than for overcoming the prejudices which otherwise he would acquire, If instead of making a child stick to his books, I employ him in a workshop, his hand works for the development of his mind. While he fancies himself a workman, he is becoming a philosopher. No matter which trade is adopted, Emile must work like a peasant and think like a philosopher, if he is not to be as idle as savage.
>
> The great secret of education is to use exercise of mind and body as relaxation to one another. Let all the lessons of young people take the form of doing rather than of talking; let them learn nothing from books which they can learn from experience".

We may here dwell for a moment on the significance of the three cords and the staff with which the student was invested at the time of the **Upanayan** ceremony. As stated above the three cords signified firstly that the student was enveloped and protected by the three Vedas (the sacred books of knowledge). They also signified that the student would endeavour to develop his faculties to fight the dark forces of **Avidya** (ignorance), **Anyaya** (injustice) and **Abhava** (want). At the same time, they were required to remind him of the three sacred debts he owned to his parents, teachers and ancestors.

Similarly, the staff also had an equally important significance. The staff is a traveller's symbol. Set on the road to knowledge, a student is required to be self-confident and self-reliant. He is also supposed to be vigilant and act as a watchman against the evil forces of ignorance, superstition, injustice, tyranny, disease and deprivation.

In short, the initiation ceremony was intended to set the student on the path of social commitment and to ingrain in his character the virtues of courage, self-confidence and self-reliance. These were to serve as his shields during the ups and downs of life's tempestuous journey.

It would be appropriate to mention two more characteristics of the Gurukula system of education, which have also considerable relevance in modern times. It was a normal feature in these schools to employ senior students to assist the teacher in the task of instruction and management. These monitors, as they may be called, discharged the role of elder brothers in the family. On the one hand it relieved the teacher of routine work, on the other, it trained these advanced scholars in the art of teaching. Well might we require our graduates and senior scholars to undertake the work of teaching their less fortunate brothers and sisters in our crusade against illiteracy, ignorance, superstition and obscurantism. The practice of ragging and bullying the younger students by the senior ones was unknown in India. It is purely an imported practice and may well be curbed without any compunction. The elder boys and girls have a duty towards the younger ones and the younger boys and girls have always shown a marked deference to their elders in India.

Yet another feature of the Gurukula system of education which deserves notice is that it did not prescribe any periodical or annual examination. As stated by A.S. Alteker in his 'Education in Ancient India', a new lesson was given only when the teacher was satisfied that the old one had been mastered. The end of the educational course was not marked by any lengthy or exhaustive examination. No degrees or diplomas were given. Education was broad-based, intended to develop character and personality, to inculcate civic virtues, and to turn out citizens well-qualified to follow their professions and discharge their duties. It emphasised the value of self-imposed discipline and thus produced a galaxy of scholars, thinkers and administrators who made significant contribution to the advancement of knowledge in the varied spheres of Philosophy, Logic, Mathematics, Astronomy, Chemistry, Medicine and the general well-being of the people.

At the turn of the century, Swami Shardhananda (then known as Mahatma Munshiram), the follower of Swami Dayananda was undergoing a psychological crisis. Although, the D.A.V. college had been established at Lahore in 1886 to meet the challenges emanating from the British government, Christian missionaries and English educationists and had achieved commendable results in fighting the forces of orthodoxy, superstition and dogmatism, yet to the visionary in Mahatma Munshiram, it was not doing all that was required. Being of a militant temperament and inspired by Dayananda's vision of a religious, modernised, committed Indian, he embarked upon the establishment of the Gurukula on the banks of the river Ganges when an opportunity offered itself with the grant of a generous land donation in village Kangri by Thakur Aman Singh of Bijnor. The Tribune of Lahore for 18.1.1900 carried the following statement of the aims and objects of the Gurukula :

(a) Physical improvement, by enforcing **brahmcharaya** (celibacy), active habits and well-regulated life.

(b) Intellectual improvement by instructing the students in our **Satya Shastras** (true scriptures), sciences and philosophy, and English language and literature.

(c) Religious and ethical improvement, by teaching the Theistic religion of the Holy Vedas, the Ethics of ancient **rishis**, from Brahama to Jaimini and of other devotees at the temple of Truth.

(d) Social and **Samajic** improvement, by placing before the students elevating ideals, such as showing due respect to age and learning, altruistic notions of **Paropakara** (charity or benevolence) and self-abnegation and the regulation of conduct accordingly. It also aims at the improvement of national character, by placing the local or national ideas on a sounder basis, by giving to their education the colouring of Indian tradition and the vitality inborn of the genius of the people.

A.N. Whitehead also advocates something similar to this when he says that :

> "The primary reason for the existence of University is not to be found either in the mere knowledge conveyed to the students or merely in the opportunities for research afforded to the members

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

of the Faculty. The justification of a University is that it preserves the connection between knowledge and the zest of life by uniting the young and the old in the imaginative consideration of learning. The University imparts information, but it imparts it imaginatively. A University which fails in this respect has no reason for existence. Youth is imaginative and if the imagination be strengthened by discipline, the energy of imagination can in a great measure be preserved through life.

Thus the proper function of a University is the imaginative acquisition of knowledge. A University is imaginative or it is nothing, at least nothing useful.

Imagination is a contagious disease. It can only be communicated by a faculty whose members themselves wear their learning with imagination."

It may be mentioned here that while the aim of Gurukula was to raise bands of youngmen inspired by ancient lore, and well-versed in modern sciences, the medium of instruction was laid down to be the national language Hindi, and to this end of producing scientific books in Hindi, the early teachers of the Gurukula, under the inspiring leadership of Mahatma Munshiram bended their energies with remarkable zeal and achieved notable success.

During the last 85 years of its existence the Gurukula has passed through many vicissitudes but if the success of an experiment has to be judged by its end products, the Gurukula can justifiably boast of having produced an illustrious galaxy of educationists, scholars, historians, journalists, parliamentarians, public leaders, medical practitioners, social workers and freedom fighters. If education is described as a preparation for life, the Gurukula experiment is entitled to a seat of respect in the councils of modern educationalists. By laying emphasis on personal attention to students, monitorial system, simple living and high thinking, intellectual enquiry, a happy blend of vocational and spiritual education, the Gurukula system may well claim to be capable of yielding excellent results in modern times.

India is in ferment today, and there are many controversies raging in the country with regard to the most desirable form of educational system but there shall be no doubt that as a result of the self-confidence and maturity which the nation has acquired in recent times, we shall be able to evolve a system which while blending the old and the new will transcend both in form and content.

I would like to end this paper by quoting Shakespeare :

"Not high raised battlements of laboured mounds
Thick walls or masted gates
Nor cities proud with spires and turrets crowned
Nor bays, nor broad-armed ports where laughing
At the storm rich navies ride
Not storeyed and spangled units
Make the state—but men,
High minded men".

Production of such men is the function of a University. The success of a University may be measured in terms of the high-minded men it produces. ☐

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Educational Ideas of Jose Marti, Jose Vasconcelos and E. Claparede

S. R. Narayan Rao*

> *"Thus, ideas are the mothers of life, its substantial force and essence, the inexhaustible reservoir from which the waves of life flow incessantly".*
>
> —V.G. Belinsky

The establishment of the Academic Staff Colleges (ASCs) in various universities is a unique contribution of the University Grants Commission (UGC) towards the upgrading of the quality of the university/collegiate education which seems to have fallen on days of depressing decline and dysfunction. The ASC is a new venture, a new answer to the present educational challenge and it is hoped that in the calculation and composition of this new answer, the educational ideas of Jose Marti (1853-95) of Cuba, of Jose Vasconcelos (1882-1959) of Mexico and of Edouard Claparede (1873-1940) of Switzerland will have a considerable say and impact.

Education has become a weak force in our country today, unable to create the outlook of humanistic secularism as a prop to our spirit of nationalism and the declared purpose of creating a socialistic pattern of society. In such a context of dire intellectual need, the ideas of these educational thinkers are highly relevant in the restructuring of our methodological practices and attitudes in the field of higher education. All these three educationalists were dedicated democrats and secularists who saw education as the best means of achieving man's individual and social redemption. Jose Marti and Jose Vasconcelos were not only educational philosophers but also political activists and indeed, it is a glorious tribute to the community of teachers that Jose Marti died on a battlefield while fighting against oppression and dictatorship in Cuba; Jose Vasconcelos became the Minister for Education in Mexico and it was under his farsighted leadership that a revolution was effected in the practical organisation and development of educational ideals in Mexico, bringing about nationalistic renovation and scientific modernisation. E. Claparede, on the other hand typifies an academic educational philosopher with unswerving commitment to the cause of education and scientific humanism without being a political revolutionary. The ideas of these three thinkers, stimulating and fertile in their own ways, offer a new quarry for extracting guiding principles, and practices in our day-to-day work as teachers.

Of the many definitions of education provided by Marti, off and on, this one is comprehensive and brings out the essence of Marti's philosophy : "To educate is to entrust man with the whole of human experience which has preceded him, it is to make each man a summary of the living world...to place him at the level of his times... to prepare him for life." With admirable clarity and simplicity, Marti has outlined the essential features of true education : universality, contemporaneity and creativity. It is the harmonization of these three concepts in educational practice that makes students develop integrated personalities—an educational ideal held aloft by eminent personages from Swami Vivekananda down to Prof. Yashpal, in our day. According to Marti the central concern of education should always emanate from the present, the contemporary reality. Therefore, for Marti, higher education should have the motif : "For the New World we require a New University". That is what is expected of an Indian University—achieving a contemporary relevance by participating creatively in the development of a new and strong India well equipped intellectually, morally and politically for in the words of Tagore, "The next chapter in world History is internationalism". The socio-political aspect of Marti's educational ideas can be gathered from these words : "Of all the problems which are now a days considered to be of paramount importance, only one is in fact so. It is of such tremendous importance that all the time and energy in the world would hardly be enough to solve it, namely, the ignorance of the classes which have justice on their side". This can also be taken as a summing up of as well as comment on the historical Indian experience of iniquities of caste system, mass illiteracy and unbearable poverty—in short of 'what man has made of man' not only in India but elsewhere in the world also. Hence, Marti feels that education should be "a campaign of tender-ness and knowledge" for education should be a promotion of human solidarity and an unremitting effort to bring into existence a better human society.

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The passion and commitment of Marti is matched by the dedication and vision of Jose Vasconcelos, the Mexican educational philosopher, who like Jose Marti was a life-long campaigner in the cause of education. The words uttered by him on becoming the Rector of the National University of Mexico are significant : "I do not come to work for the University, but to ask the University to work for the people". Can there be a better plea for making university education vitally significant for the all round development of the Society ? It is a pity that our universities have been producing graduates who are more interested in getting cushy and white collar jobs (really a hang over of the colonial era in our recent and modern history) than in making a common cause with the toiling millions of industrial and agricultural labourers and workers in the creation of an egalitarian society which, in fact, will be a practical realization of the spiritualistic message of ancient India. It is this apparent and glaring breach between the educated and the uneducated that made Vasconcelos probe deeper into this matter and say that "educational action is not just for children or students but for the entire community"—not confined to classrooms but concerned with the streets as well. Thus this idea underscores the urgent need for Adult Literacy and Distance Education. Vasconcelos did not reject the past, although the past of Mexican history (like Indian history) is one of affiliation with the European colonialism. He observes that 'colonial humanist legacy should be retained and blended with the rediscovered native values for the ushering in of "the cosmic race" endowed with unique qualities for the creation of a new world'.

Vasconcelos gives us a distinct idea about what should be our pedagogical model when we are wedded to secularist and democratic ideals by calling up the fictional figures of Robinson Crusoe (the character created by the English novelist Daniel Defoe) and Ulysses (an epic hero created by the ancient Greek poet, Homer) to symbolize two kinds of approach : "I take Robinson to symbolize the astute, improvised and exclusively technical method which characterizes the Anglo-Saxon are in the world... efficient but totally lacking in genius. Ulysses on the other hand, symbolizes the traveller, who explores, acts, discovers and creates not only with his hands and never with his hands alone, because he has neither the ability nor the wish to rid himself of the creative talent or of the treasures of that millenial culture that he carries with him and, which broaden his spirit". Here, Vasconcelos, posits the idea of 'Structurative Pedagogy'—the creative fusion of the past with the present to expand the mental horizon of the students. Exclusive concern with the present or mere imitation of the past can only lead to dangerous lopsidedness, immoderate materialism or blind obsurantism (to which we are hapless witnesses in India today). Therefore, for Vasconcelous, Ulysses represents the ideal of a search that goes "beyond the mastering of science into the marvellous unfolding of the mind." Science and technology should be the byproducts of unceasing unfoldment of the mind and not its enslavement. The most crucial and central idea of Vasconcelos's philosophy of education is embedded in this observation : "the educated mind enriches everyday reality precisely because it can modify and outwit certain aspects of necessity, thus developing a free mind, through Knowledge". In the light of the implication of this idea, we can only bemoan the fact that in India, the educated class instead of enriching the ordinary reality has only defrauded it of its moral and humanistic dimensions and reduced it to the threadbare poverty of millions and millions of people. Higher education has only produced the educated unemployed and the unemployably educated. Modification of reality that Vasconcelos so gloriously visualises calls for not only dependable competence but also attitudinal changes—the two vital requirements in which our present educational system is woefully deficient. Education, in essence, is a process of dynamic integration, not mere dull, lifeless routine instruction. Let us hear Vasconcelos on this point : "It was not so much my reasoning that made me philosophize but my desire for integrity in all things : thought, emotion and action".

E. Claparede can be said to be more concerned with the understanding and unravelling of the mechanism of the educational process both in its biological and psychological aspects than with the contours of social and political realities. That way, he appears to be strictly pedagogical without exhibiting the ecstasy and exuberance of Marti or Vasconcelos. But Claparede was no less dissatisfied with the state of education. His concept of education has generally been described as the theoretical construction of a biological anthropology applied to education. The founding of the Institute of Educational Sciences at Geneva in 1912 by Claparede marks a new thinking about the fundamental aspect of education and imparts a new impetus to the educational enterprise. Claparede's idea of education can be taken as an amalgam of Rousseauism and Scientific Positivism and technically described as 'functionalist' view of education or 'dynamogenism' i.e. the idea that every living thing, and the child in a specific way, has its own peculiar driving capacity, which according to Claparede, should be directed and developed into meaningful educational activity. This is the very gist of Claparede's educational philosophy and all his other thoughts and explanations are elaborations in different contexts around the above mentioned central idea. On this matter, the famous educational psychologist Jean Piaget comments : "Everywhere the idea (gains ground) that mental life is a dynamic reality, intelligence a real and constructive activity, will and personality continuous and irreducible creations". For us, Piaget has hit upon the key idea of Claparede—education as the biological and psychological process shaping the "will and personality "of students as "continuous and irreducible creations". A look at our present educational scenario in our colleges and universities shows that "will and personality", are conspicuous by their absence in the products of higher education.

'Profitability', 'Efficiency', and 'Interest' appear prominently in Claparede's exposition of his concept of functionalism. This functionalist approach is denoted by the question "What is it for ?" In the words of Claparede : "After wondering what sleep is for, I tried to see what childhood was for, what intelligence was for, what the will was for." Precisely because Claparede is a realist and not a wishy-washy idealist (as many educational thinkers tend to be) he condemns in no uncertain terms any system of education as 'Wasteful', 'Unproductive', 'Unprofitable' if it involves huge financial expenditure without adequate returns in terms of a maximum number of truly educated youngsters. In a subtle way the cost-benefit notion is worked into the conceptual framework. This may sound 'elitist' but this is only in a low key and actually it is the underutilization of the 'intellectual capital' of the society that receives his strongest condemnation of a system of education. So, 'profitability' means the nurturing of the nation's incipient intellectual capital (the growing children) with maximum advantage to the society because of the proper upbringing and education of the students. Again, 'efficiency' is not to be confused with mechanical dexterity but should be viewed, "as an essential component of any aptitude". For an aptitude becomes manifest only when required by an external situation imposing certain constraints on the subject. Efficiency therefore, does not mean mechanical reproduction (memorization) but a creative confrontation with a problem—with attendant success. Our present examination system has encouraged to an enormous extent the habit of mugging up and the plethora of examination malpractices (the newspaper reports are full of this stuff during the examination season) are a side effect of this inert acquisition of knowledge. Efficiency in Claparede's sense can no more be applied to the successful than to the unsuccessful candidates.

As a disciple of Rousseau, Claparede wanted that our educational activity should be 'attractive' and 'interesting' but spon realized the hollowness of this expectation based on superficial and artificial manipulation of matters : a profounder meaning was imported into the idea of 'interest'. "Interest" cannot be reduced to a question of what is interesting...it is more a question of what is in one's interest...it would be against the interest of the organism to fail to react in a certain way". Interest thus has two aspects-the natural and the social, curiosity should be roused for it is a latent natural quality in a human being (more so in children or students, though in an active form). But soon this curiosity should be fed and translated into an intellectual skill, competence which has social implications. Unfortunately, our classrooms in the colleges rarely rouse the curiosity or impart competence but manufacture on a large scale, incomprehension and incompetence.

Claparede provides us with two fascinating metaphors in order to make us understand the pedagogic art : horticulture and chronometer. "Teaching must be founded on a knowledge of the child, just as horticulture is founded on a knowledge of plants". And the second metaphor : "Take a chronometer and take it apart : you will find cog-wheels everywhere. Break one cog : your chronometer will no longer work. It will no longer be of any use or value. Does it follow, that it is the cog-wheel that makes the machine work? Not at all; it is really driven by the tension of the spring. The cog-wheel plays a mechanical role, the spring plays the driving role, the vital role, as we might say if one put oneself in the position of the chronometer itself". The metaphor of plant emphasizes the fact that the horticulturist should be familiar with factors that make for the growth of the plant in the expected way. Similarly, the teacher, the lecturer, should be aware of the student's innate propensities and be in control of those strategies that help in the learning process that help in the formation of the student's proficiency in the subject and his personality in a general way. But subtler than this metaphor is the metaphor of chronometer which perspiciaciously suggests the mechanical and the vital or the spiritual aspects of our routine educational work. Just as the movement of the wheels is a mechanical one, so also instruction in the classrooms is the mechanistic, the logistic part of education. Just as the spring imparts motion to the wheels in the clock or more specifically the tension in the spring, so also it is the larger idea of what education is for, or the faith in the efficacy of education which shows itself as a practical commitment (tension) that imparts intellectual thrust and power to our routine lectures in the classrooms. It is the absence of this invisible 'tension' that makes instruction or lectures sterile and lifeless.

The above metaphors led Claparede to the enunciation of his celebrated concept of 'Copernican revolution' which is expressed in this way : 'Childhood has a biological role to play...one must therefore study the natural manifestations of the child and make educational activity fit in with them. Methods and curricula gravitating around the child, and not the child turning as best it can around a programme decreed without reference to him : that is the Copernican revolution psychology urges on the educator". The Macaulayan prescription has still been ruling the roost in our colleges and the universities and the copernican revolution appears to be a far cry. We are convinced that the Copernican revolution alone can make our education relevant and meaningful to our students and the society at large. A motivated student is the very fulcrum of the educational activity and a vital factor in its success.

The ideas of Marti, Vasconcelos and Claparede have been given in a rather sketchy and brief way just to make available a broad and general background to our teachers and as a sort of fillip to their own thinking. It is said that college teachers should also be given formal training like the primary and the secondary school teachers for improving the quality of higher education. The suggestion is a plausible one and a realistic appraisal of it goes to point out its inadequacy to meet the peculiar challenge facing the field of higher education—significant attitudinal changes in the teachers as well as the taught. As the inculcation of habits and facts is of prime importance at the primary and the secondary school stage, formal training will really help. But the universities and colleges are not only concerned with the communication of facts but also of how to make sense of these facts with respect to oneself and the society as a whole. Therefore the college pedagogy should aim at the blending of the technical and the general aspects of education. The technical refers to the corpus of material available in each subject and the general refers to a perspective of general ideas into which the technical items are fitted. In fact the ideal thing would be to see to it that our day-to-day classroom lectures are animated by these general educational ideas and the process that produces this precious animation is the real orientation that is required for a college teacher. Academic Staff College is pre-eminently suited for this purpose and it is hoped that the ideas of Marti, Vasconcelos and Claparede will accomplish, albeit in a small way, this purpose. ☐

Socialisation, Education and Women :
Exploration on Gender Identity

K. Chanana (ed.)

This selection of papers was presented at a seminar organised by the Nehru Memorial Museum and Library in 1985. The contributors are drawn from different disciplines—and the essays, therefore, cover a variety of fields. The main point that emerges from this volume is the overreaching importance and impact socialisation has had on the lives of girls and women.

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Education and National Development

"What is the role of the educational system in national development ?" asked Shri B. Shankaranand, Union Minister of Law & Justice and Water Resources, while delivering the Convocation Address at the 131st annual convocation of the University of Madras. The Minister volunteered the answer when he said, "Education should be the basic input in the gigantic effort of our national development and social change. Education must serve as an instrument for social change, transformation, development and promotion of equality and humanism." Excerpts

Convocation

Since Independence the aims of education have expanded to a revolutionary degree with the right of access to education as a basic ideal while the lack of resources and the poor holding capacity of the system itself have not been able to achieve this ideal in spite of the Constitutional directive on the State and Central Governments.

Now, what is the role of the educational system in national development? It is a peculiar feature of Indian education that while the people and the Government firmly believe that it is through more education to more people that individuals and society will prosper, there is a glut of overflow of educated manpower in the country resulting in increase of the educated unemployed.

Diversification of courses, educational and vocational guidance, correspondence and continuation courses and job-biased educational institutions like polytechnics and occupational institutes are extensively tried. But the experience has shown that despite these innovations, the quality of the outputs of the educational system has not changed much. The recent approach to this problem has been one of changing the traditional styles of thinking and action, demanding works under educational plan and open universities in order to keep pace with fundamental changes that are sought in economic and cultural ffelds. Strenuous efforts are made in the country to introduce a scientific outlook and a new technology bias into our educational system. The use of mass media of communication, the agricultural extension programmes and other non-formal educational activities form an important aspect of the education system in the country. The formal academic orientation in terms of classroom instruction exclusively with textbooks leading to passing of examinations is of no avail, if it is not enhanced by making it environmentally coherent. The continuing interaction with the surroundings becomes important for a student so that he can constantly evaluate the content of his learning in the light of where and in what manner he can apply the learning he acquires. The activities of Extra-mural Studies and Community Extension Services are significant in this context, as they help to understand the life and needs of the community so that changes could be effected in the curriculum based on the principle of relevance, modernisation and diversification.

Education should prepare the individual to discover his talents, sharpen his abilities and realise his potential. Education imparts to him knowledge, skills, attitudes, endows him with social and cultural values, and prepares him as a responsible citizen in the community so that he can contribute to the productive programmes of the national development. Education should be the basic input in the gigantic effort of our national development and social change. Education must serve as an instrument for social change, transformation, development and promotion of equality and humanism.

It is in this context that we feel a pardonable pride in reflecting on the fact that our great leaders of modern Indian thought, political action and national education, like Aurobindo, Vivekananda, Tilak, Rabindranath Tagore, Maulana Azad, Radhakrishnan, Zakir Hussain, Dr. Ambedkar and, above all, Gandhiji and Jawaharlal Nehru, perceived the organic linkage of India with the wider struggling world as an important ingredient of our national perception.

Education is an important instrument for shaping the personality and moulding the character of individuals. It finally helps to mould the shape of the society itself. The quality and content of development of our social, political and economic life is closely connected with the quality of education imparted at the various levels in our educational institutions and we are looking to these institutions to produce young men and women equipped with knowledge, skills and ideals which will enable them to play an effective role in national development, and it is with the help of these young men and women that the new India of our dream, united, strong and prosperous, is to be built and our ideal of a secular, socialistic and egalitarian society is to be fulfilled. We have to march on the path of progress by narrowing down the social and economic disparities.

The reason for slow progress towards our national ideals to some extent lies in our outmoded educational system inherited from the British rulers, which was mainly devised to keep us docile and servile. It was not at all meant to instil ideals and aspirations into the lives of our youth. Attempts have been made since Independence to reform educational system and we have achieved a fair degree of success in the field of medicine, science and technology. For it is inevitable that our priorities in education should remain utilitarian for some time longer. Considering, therefore, the expansion of facilities already achieved and the increasingly available infrastructure as a result of several Plan programmes, I am of the view that it is time to pay special attention to the quality and content of education and its relevance to national development.

The mission of our education system should be to capture afresh for each succeeding generation of youth those fundamental values which inspired and visualised our culture through ages. These are the values which can bring compassion and charity and the spirit of service into the lives of our people and end the violence and intolerance which we sometimes see inside and outside the university campuses. Only our cultural heritage with its abiding emphasis on unity, tolerance, discipline and brotherhood can help our society to preserve its equilibrium.

Educational development in the post-Independence era presents a picture of huge masses of people struggling restlessly to make up the decadence of centuries of slavery, exploitation and ignorance though conscious efforts for social, economic and intellectual development. During the last 2-3 decades, there has been a tremendous upsurge of people and their aspirations. The participation rates and the enrolment rates in various educational institutions have over-strained the educational capacity of the country, which has been further strained by population explosion while the incapacity of the educational system to meet the social demand has frustrated the rising aspirations of the ever-increasing population. It has brought inevitable qualitative and quantitative impediments to social and economic development.

The vast masses of people have become conscious of their poverty and they want to get rid of this as quickly as possible. It is their strong belief that "education" will deliver the goods to them, and the capcity of the educational system has to prove itself for its adequacy in fulfilling the hopes and aspirations of the people; with the result an uneasy balance of tolerance exists in the country between the restless, buoyant people and the incapacitated educational system.

We cannot afford to be hopeless spectators to wait and guess as to what will happen in the next decades. Our new Education Policy envisages a sound education system which, I hope, will completely identify itself with the needs af the society for its full development into an egalitarian one. Our path of education shall have to be clear as far as future is concerned.

We are in terms of population the second largest country in the world and in terms of territory the fifth largest. We are also the world's biggest participatory democracy, whose electorate is almost equal to the total population of the United States of America. The Republic of India is also one of the world's biggest Federal Society. We are a multi-ethnic, multi-religious, multilingual and multi-regional society, aspiring to build a cohesive pattern of federal fraternity in keeping with the heritage of the Indian National Movement, we remain a unified country aspiring to deepen our ties of national integration. Parochialism of religion, caste, creed, region and language, etc. should not cloud our national unity. We might be by birth and domicile Tamilians, Kannadigas, Andhras, Bengalis, Panjabis or Assamese, but we are all basically Indians. In fact, a healthy national integration is not contrary to the necessary and desirable promotion of regions, even subregions. If India is weakened or is destabilised, all its regions and parts would also suffer.

Friends, it seems to me appropriate to be reminded at this juncture of the terrible challenges facing our great experiment in building brick-by-brick a stable edifice of healthy, vibrant and just social order. I have also to emphasise the necessity of national integration and political stability for our great country India for very obvious reasons.

It is important to stabilise our

(*Continued on page 15*)

Standing Committee Meets at Sambalpur Varsity

The 218th meeting of the Standing Committee of the Association of Indian Universities will meet at Sambalpur University on 5 November, 1988. Presided over by Dr. P.V. Salvi, President of AIU and Vice-Chancellor, Marathwada Krishi Vidyapeeth, the meeting is likely to be attended by Prof. G. Ram Reddy, VC, Indira Gandhi National Open University; Prof. N.M. Swani, Director IIT, Delhi; Shri Syed Hashim Ali, VC, Aligarh Muslim University; Dr. Bhagat Singh, VC, Punjabi University; Dr. A.M. Michael, Director, Indian Agricultural Research Institute, New Delhi; Dr. M.S. Valiathan, Director, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum; Dr. D.M. Nanjundappa, VC, Bangalore University; Dr. R.V. Ramakrishna, VC, University of Agricultural Sciences, Bangalore; Shri P.S. Habeed Mohamed, Administrator, Utkal University; Prof. K.J. Mahale, VC, Manipur University; Prof. Mohit Bhattacharya, VC, University of Burdwan; Prof. K.N. Shah, VC, Saurashtra University; Prof. Ramlal Parikh, VC, Gujarat Vidyapeeth; Dr. C.R. Mitra, Director, Birla Institute of Technology & Science, Pilani; Prof. V.D. Gupta, VC, University of Gorakhpur; Dr. (Miss) M.D. Bengalee, VC, University of Bombay; Prof. B.P. Dash, VC, Sambalpur University; and Dr. K.M. Safeeulla, VC, Mangalore University.

A number of important issues will come up for discussion by the Committee. Dismissal/resignations of the Vice-Chancellors of universities in Bihar and Dr. Harisingh Gour Vishwavidyalaya will be taken up when the Standing Committee considers the report of its subcomittee comprising former Vice-Chancellors Prof. R.C. Paul (Panjab University), Prof. M.V. Mathur (Rajasthan University), Prof. Rais Ahmed (Kashmir University), Prof. M.M. Chakraborty (Jadavpur University) and Prof. (Mrs) Vanaja Iyengar (Sri Padmavati Mahila Vishwavidyalya). The Standing Committee will also have for its consideration Prof. Ramlal Parikh's (VC, Gujarat Vidyapeeth) proposal to introduce University News in Hindi in addition to its English edition. The progress of the Indo-U.S. Book Bank for supply of technical books to Indian universities/colleges through AIU will also be reviewed.

The Committee will also have for its consideration the reports of its sub-committees, namely, Staff Affairs Committee, Finance Committee and Equivalence Committee. Report of the Steering Committee for ACU Conference of Executive Heads to be hosted by AIU in January 1991 will also be taken up. It will also have for its consideration the request of North Gujarat University for being admitted as a Provisional Member of the Association.

The Sambalpur University, our hosts to the Standing Committee, was established in 1967 with its main campus at Jyoti Vihar, Burla. The University has 85 degree colleges, 16 postgraduate departments, one college each for Law and Medical Science and two Engineering Colleges. Both the Medical and Engineering Colleges offer Master's and Doctoral Programmes. From the current academic session, the University has introduced a 5-year Law Degree Programme as recommended by the UGC. This is the first in all the Universities in Orissa and the second one in India after Calcutta University to introduce this course. ☐

Education for Peace

A National Seminar on 'Education for Peace' was recently organized under the auspices of the Department of Education and the Economics of Education Unit of the Department of Economics, University of Bombay. Dr. (Miss) M.D. Bengalee, Vice-Chancellor, University of Bombay, presided over the Seminar while Shri Homi J.H. Taleyarkhan, delivered the Keynote Address. Principals and teachers of Education Colleges, Principals and teachers of schools, Heads/Principals of Orphanages, Balbhavans and Missionaries of charity, the teachers of the Department of Education and Economics of the University of Bombay and teachers from a few Arts, Science and Commerce colleges participated.

Welcoming the participants, Professor R. Bharadwaj, Director, University Department of Economics pointed out that in the Department of Economics of the University of Bombay, in the revamping of the curriculum in Economics, issues of current paradigms of education were considered. Peace studies existed at all levels of education. But, this Seminar, he stated, would concentrate on the role of school and university education for peace.

Shri Homi J.H. Taleyarkhan, in his Keynote Address, emphasised that "the world cannot afford to toy with war-like postures but be firm in the saddle of Peace". He praised the good work done by the University of Bombay in organizing this Seminar and outlined the role of education as (1) promoting national and international integration, and (2) creating consciousness for peace and development. He observed that even if 50% of the total annual world military spending was diverted to education and health activities, it would help to provide education to more than 500 million children, and heath to more than 20 million patients. According to him, to bring peace in the world was an enormous national and international task and this could be done not by governmental or official agencies, but by non-official agencies like the universities. He expressed the hope that the Seminar would help to form strong public opinion against conflicts and confrontation and create 'peace consciousness' among people.

Dr. (Miss) M.D. Bengalee, the Vice-Chancellor, in her Presidential Address, emphasized that people who are in regular touch with children and adolescents can contribute a lot to bring peace in society. The aims of education have been national peace and international understanding. She desired that universities should help to make the individual balanced, contented, integrated and confident. Education could create a sense of love and brotherhood among people. She said that the New Education Policy aimed to develop in each student a caring attitude, tolerance and a desire to help the less-fortunate, which is an indication of our care for our people.

Dr. Bengalee also observed that peace depended on socialisation, syntality and togetherness. Technical progress has reduced socialisation and syntality and has made each individual independent who has no smpathy for others. Education can contribute to improving social relations. It could also impress upon mass media like the cinema not to glorify religion, war conflicts, poverty, sex and atrocities on women. What is necessary is to emphasize mental hygiene.

In the theme paper 'Education for Poace—Role of Schools', Mrs. R.P. Kalliath argued that the negative attitude to the concept of peace should be overcome by making peace studies activity-oriented, challenging, exciting and adventurous. The spirit of peace should be infused through the daily curriculum, which should focus on the negative issues of social evils and the positive aspects of peace. Languages and social studies, including moral science, are particularly suited for peace education.

In the other theme paper 'Education for Peace—The Role of Universities' Dr. S.M. Israney said that peace education should form an integral part of citizenship training of youth; it should teach a rational outlook and convince people to settle conflicts through non-violent and democratic methods. Education should develop non-frustrating modes of behaviour through sensitivity training, group dynamics and role-playing. Education should bring peace within oneself and create suitable environment for peace.

Dr. Israney pleaded for a more constructive role in peace by Universities. They must foster 'total' human, intellectually mature world citizens or future-oriented personalities. University curricula must include courses on peace. Revision of world history, introduction of compulsory field work, a course in world citizenship, increase in foreign language load and more international exchange programme should be undertaken.

The following recommendations were made at the seminar :

(1) Effective communication skills should be developed.

(2) Children at school should be exposed to the existing social evils. They should do field work in slum-areas, should visit hospitals, etc. to have a first-hand knowledge of social problems.

(3) The role of teacher should be made effective for peace education. Only teachers properly qualified in all respects should be appointed and allowed to teach in schools and colleges.

(4) The role of NSS could be expanded. The students should be given work opportunity to do things for others.

(5) Students should be exposed to teachings of great rulers, philosophers and social reformers.

(6) Lessons on philosophy of life should be taught.

(7) Value-oriented education, which now exists only in colleges of education, should be made compulsory in all faculties.

(8) Film appreciation courses should be introduced in schools or colleges to overcome the negative effect of films on young minds.

(9) More T.V. time should be allotted for value based peace education. □

Illinois-Baroda Faculty Exchange Project

The University of Illinois Urbana—Champaign (UIUC) in collaboration with the Faculty of Home Science, M.S. University of Baroda undertook in 1985 a collaborative project titled "Group Project to India" under Women in International Development (WID). The primary objective of the Project was developing a curriculum for WID. This project was sanctioned under the Full-bright Hay's Group Study Abroad Programme. The outcome of the project was a monograph entitled "Household Resources : Their Changing Relationships—Case Studies in Gujarat, India" published by International Agriculture Publications, College of Agriculture UIUC and the same is used as a sourcebook at the undergraduate level in Women's Studies and Human Resource and Family Studies Programme at University of Illinois Urbana-Champaign, Faculty of Home Science, M.S. University of Baroda and elsewhere.

Another collaborative project titled "Illinois Baroda Faculty Exchange Project" in WID between these two Universities was proposed to United States Information Agency and was sanctioned. This interdisciplinary project of three years duration started in the year 1987. The aim of this project was to develop a number of teaching modules pertaining to various areas of development programmes focussing on women and households. The topics covered in the set of modules include Household and Families, Household Production, Women and Household Production, Women in Agriculture, Women and Rural Credit, Household Energy Consumption, Women and Fertility Behaviour, Women's Health Care Services, Housing and Women, Household Food Systems and the like. The focus of these teaching modules which are to be used at postgraduate level, is on variables of significance to the topic in question and research methodology. Faculty exchange between the two universities is an integral part of the project.

Two International Workshops were also planned with the purpose of refining the teaching modules. First of these two workshops titled "Women, Households and Development : Building a Data Base", was held from July 11-22, 1988 at University of Illinois, Urbana—Champaign. The workshop was attended by nearly 65 participants, from 22 countries of the World and included academicians, researchers, government officials, representatives of implementing agencies of development projects and officials of United Nations.

The second workshop in the series is planned to be held at Faculty of Home Science, M.S. University of Baroda from June 25-July 4, 1989 and is expected to have representation from various countries especially of the Asian Region.

Sri Sathya Sai Centre for Computer Sciences

Sri Sathya Sai Centre for Computer Sciences established in June 1988 at Sri Sathya Sai Institute of Higher Learning, Prasanthinilayam, subscribes to the philosophy of educating the students with academic knowledge as well as practical skills not only in Computer Sciences and Information Systems, but also in other related fields. The Centre is equipped with a 9-Megabyte FUTURAL AL 6832 supermini which runs under UNIX (System V) operating system. This Computer system supports presently 14 Intelligent Terminals which are solely allocated for use by students and staff members of the Institute. The terminals are all IBM compatible PC systems which support local processing under MS-DOS operating system. A 3-Megabyte PC/AT is being used as a file server for 7 Personal computers connected via LAN (Arch-Net).

A wide selection of software systems/packages are made available to students, research scholars and staff members. These include UNIFY and other data base and spreadsheet packages, UNIX text editors, and the language compilers for C, LISP, Prolog, Pascal, FORTRAN, COBOL, BASIC, Modula and Ada.

The Institute proposes to have an advanced Master's level course in Computer Science at the Institute. Short term courses for the students aimed at the development of their knowledge/skills/abilities relating to operation of computers and applications in various areas with the help of available software support are offered by the centre.

Orientation Programme on Autonomy

Shri Durgaprasad Saraf (Autonomous) College of Arts and Applied Sciences, Shreeramnagar (A.P.) organised a two-day Orientation Programme on College Autonomy for the Principals and Heads of the Departments of the seven autonomous colleges in the jurisdiction of Andhra University. The topics discussed at the Programme included "Innovations in Teaching and

Learning Processes", "Human Resources Development", "Research and Extension Activities", "Accountability and Evaluation", "Communication Skills", "Autonomy and Accountability" and "Restructuring of Courses". The participants were divided into groups and their recommendations for effective implementation of autonomy were accepted.

Prof. K.V. Ramana, Vice-Chancellor, Andhra University, gave away the certificates to the participants and Dr. G.D. Sharma of NIEPA, addressed them on the concluding day. Principal A.L. Mohan was the Director of the course while Shri I. Bhanumurty acted as Course Coordinator.

IGNOU Plans Science Courses

The Indira Gandhi National Open University (IGNOU) proposes to introduce B.Sc. courses in mathematics, physics, chemistry and life sciences as well as courses in computer application and library science in July, 1989. This was disclosed by Prof. G. Ram Reddy, Vice-Chahcellor of the University in Chandigarh recently. He said the most popular courses being conducted by the university are B.A., B.Com, a certificate course in food and nutrition and a course in management. After one year a student is entitled to a diploma in management; at the end of the second year he gets an advanced course diploma; and at the end of the full three-year course he is entitled to get the M.B.A. degree. A graduate with three years of supervisory experience or a non-graduate with five years of field experience can take up the management course.

In its first year in 1987, 4,500 students were enrolled. The number has risen to 32,000 this year. It is expected to touch 70,000 in 1989 and one lakh in 1990.

Technology Data Bank

A sophisticated technology data bank is proposed to be set-up at New Delhi to provide information to both public and private sectors about the latest technological developments the world-over. The bank, to be set up at the Directorate General of Technical Development (DGTD) will draw advanced technologies from the data banks of developed countries. The Government is reported to have already initiated a dialogue with the European Economic Community (EEC) in this regard.

The main feature of the data bank is on-line access to European data banks. The Telecommunications Department is providing all facilities for connecting the EEC computers with those of India. The data centre at DGTD will be connected with the overseas computer network from which the entrepreneurs could draw upon the required technological data.

Since EEC is enlarging the community, it will upgrade its standardisation which will be of great use to the Indian entrepreneurs. EEC has also agreed to provide technological cooperation and exchange of experts as also assistance in adopting standards. EEC has also agreed in principle to upgrade Indian test labs.

The setting up of the data bank is in tune with the Government's policy to assimilate and adopt imported technologies for developing the country's own superior technologies.

Kota Varsity Courses

The Kota Open University proposes to start a number of new diplomas from the next academic session. These include Diplomas in desert development and operation planning (the first of its kind in the country), petroleum and chemical technology, automobile engineering, animal husbandry and dairy farming, bi-technology and banking insurance and allied fields.

Science and Spirituality Contest

An All-India Paper Writing Competition on Science and Spirituality has been planned by the Brahma Kumari's World Spiritual University, an organisation devoted to moral and spiritual education of mankind irrespective of caste, creed, religion and nationality. The competition is being organised as a part of the International Conference of Scientists, Technologists and Spiritualists to be held on 16-18 December, 1988 at Bangalore. The objectives of the contest are (i) to promote scientific thinking and spiritual values; and (ii) to coordinate the work of scientists and spiritualists on certain themes common to both.

The competition will be held in two categories—(1) Teachers in Universities and IITs, College Principals, Research Associates and Research Scholars etc., and (2) those studying for graduation and Master's degree in any of the Science subjects. The subjects for papers are : Category I—(i) Areas of cooperation between scientists/technologists and spiritualists for building a better world, (ii) Understanding Consciousness or soul in the light of science and spiritual knowledge; and Categorly II—(i) Need for spirituality for scientists, and scientific temper for spiritualists, and (ii) Complementary roles of science and spirituality. The winners of 1st, 2nd and 3rd prizes would get Rs. 2000/-, Rs. 1500/-

and Rs.1000/- respectively in Category I and Rs. 1500/-, Rs. 1000/- and Rs. 750/- respectively in Category II. Last date for receipt of papers is 20 November, 1988.

Further details with regard to eligibility and Rules and Regulation may be had from the Organisers, Paper Writing Competition, Brahma Kumaris World Spiritual University, 3/A, New High School Road, V.V. Puram, Bangalore-560 004.

News from UGC

INSAT-1B Programme of UGC

Between 16th November to 30th Nov., 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

16.11.88

"Ramjets—II"

"Festival Time"

"Brain and Nervous System—II"

17.11.88

"Pulse Circuits—I"

"India and America : Literary Relationships"

"Secrete of Stone Water"

18.11.88

"Algebraic Structure—I Theory of Sets"

"In Search of Ethnic Dimensions—II"

19.11.88

"Ready, Get Set, Go"

"Noh Drama"

"The Secrets of Stradivarius"

20.11.88

No Telecast

21.11.88

"Optical Illusions—II Artistic Expressions"

"Reinforced Concrete Design"

"Fight Against Hunger : Increasing Crop Yields"

22.11.88

"Carbon Flies"

"Enhancing Creative Thinking—IV"

"Ayurveda Series—I : The Silent Sentinels"

23.11.88

No Telecast

24.11.88

"Pulse Circuits—II"

"Women Writers in India"

"Challenging the Elements"

Education and National Development

(*Continued from page 10*)

national sovereignty together with National Integration. It is evident that unless our national stability is assured it would be difficult for us to implement our economic plans of development and to bring about the basic and necessary social transformation. I would like to emphasise in an enlightened gathering like this—University Convocation—that unless we develop national discipline, we may weaken the edifice of stability needless chaos and anarchy, specially at a time when destabilisation has risen its ugly head in many parts of the world prompted by interested powers. It is important for us to be doubly vigilant about the disastrous consequences of unwittingly playing into the hands of the forces of destabilisation.

It appears to me that the task of those of us who are fortunate in being the recipients of national benefits in terms of education, employment, housing, medical care and other amenities, should repay at least a part of our national debt to the teeming millions of our countrymen in helping to remove, as Gandhiji had once said: "Tears from their eyes". This, we can do by asking ourselves as to what constructive role we can and must play in mobilising our strength to achieve a just social order. □

25.11.88

"Algebriaic Structure—II Relations and Mappings"

"Sociology of Professions—Case Study of Nursing"

"Ecosystems in India—Ecomechanics—II"

26.11.88

"Language of Music"

"Art and Craft in Early Years"

"Art of Metal"

27.11.88

No Telecast

28.11.88

"Optical Illusions—III : Impossibles"

"Bridges of Help Angerous Company"

"University Round Up"

29 11.88

"Metal Memory"

"Enhancing Creative Thinking—V"

"Ayurveda Series—II : Herbal Wealth of Gujarat"

30.11.88

"Hydrotechnical Research in Energy"

"Forts of Deccan—Daulatabad"

"Nervous System in Animals"

News from Abroad

N ewZealand Proposes Graduate Tax

A Committee constituted by the New Zealand Government, under the chairmanship of Prof. Gary Hawke of the Economics Department of Victoria University, has in its report proposed tax-loan rebate scheme which would recover 20 per cent of the average costs of tuition from almost all tertiary students after they enter the workforce. On 1986 figures, this would cost students an average of just under NZ $ 1,900 for each year of full time education. Unlike the Australian scheme, the costs of tuition would have to be repaid with inflation adjustments and a real interest rate of 3 per cent on top. In Australia graduates do not start repaying course costs until their incomes exceed the average wage, but in New Zealand the tax may have to start at lower incomes to prevent the interest burden growing.

Under the Hawke scheme, students taking more expensive courses such as medicine would repay higher costs. Professor Hawke believes this would give universities the incentive to cut the costs of training in expensive subject areas, and to cross-subsidize those areas from cheaper courses.

A Public Scholarship and Research Agency would administer all state funded "public good" research. Under the proposal, universities would lose a third of their existing block grants, amounting to nearly NZ $ 180 million a year. That money would be vested in the new research agency and would become subject to competitive bids by all research institutions.

While polytechnics have welcomed the scheme, the universities are predictably critical of the proposal. Vice-Chancellors' Committee Chairman, Dr. Wilf Malcolm, said the move to separate teaching and research functions "could damage universities' unique role as bodies committed to the advancement and dissemination of knowledge."

विद्यार्थियों / अध्यापकों के लिये शुभ संदेश

पठन-पाठन प्रक्रिया में सुविधा के लिये भारतीय विश्वविद्यालय संघ कई वर्षों से स्नातक व स्नातकोत्त स्तर के विभिन्न विषयों पर अंग्रेजी भाषा में प्रश्न-बैंक प्रकाशित करता रहा है। इन प्रकाशनों में उपलब्ध सामग्री एवं सूचना शिक्षकों एवं विद्यार्थियों के लिये अत्यन्त उपयोगी सिद्ध हुई है।

हिन्दी भाषी प्रांतों के शिक्षकों एवं विद्यार्थियों की लम्बे समय से चली आती मांग को पूरा करने के लि प्रश्न-बैंकों की इस श्रृंखला को हिन्दी भाषा में प्रकाशित करने का हमारा यह पहला प्रयास निश्चय ही लाभप्रद सिद्ध होगा। इसी आशा के साथ प्रस्तुत है :

जन्तु विज्ञान (Zoology)	मूल्य रु० 100.00
रसायन विज्ञान (Chemistry)	,, रु० 160.00
वनस्पति विज्ञान (Botany)	(प्रकाशन में)

अधिक जानकारी के लिये लिखें अथवा सम्पर्क करें —

अवर सचिव (प्रकाशन)
भारतीय विश्वविद्यालय संघ
ए.आई.यू. हाउस, १६ कोटला मार्ग
नई दिल्ली-११०००२

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
October 31-Nov. 4, 1988	Short Term Course on Remote Sensing and Geo-Data Base with Socio Economic Information.	To expose the concept of Data Base Approach towards handling and analysing the Remotely Sensed and Land-based Information.	Centre of Studies in Resources Engineering, IIT, Bombay.	Dr. T.V. Pavate Chief Project Engineer, Training Extension and Project Cell, RSD-VI, CSRE, IIT, Bombay-400076
Nov. 17-23, 1988	Laser Workshop for Physicists and Chemists.	To enable the young research workers, engineers and teachers to get acquainted with the recent developments in lasers and their application in the fields of spectroscopy and photochemistry.	Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar (M.P.)	Prof. R.S. Kasana, Organising Secretary, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar (M.P.) 470003
November 19-20, 1988	8th Annual Conference of the Maharashtra Federation of College Library Associations.	Topics proposed to be discussed include (i) Computer Application in Library Services; and (ii) Role of College Library in Adult Education.	Maharashtra State Federation of College Library Associations, Solapur.	Mr. R.A. Panjab; Convener, Sholapur Social Association's Arts and Commerce College, 370 A, Muslim Pachha Peth, Solapur-413005.
December 13-17, 1988	**International Seminar on Education and Training in Water Resources in Developing countries.**	**To assess the requirements of manpower, education and training in Water Resources Sector upto the year 2025 in the developing countries.**	**Central Board of Irrigation and Power, New Delhi.**	**Mr. C.V.J. Varma, Organising Secretary, International Seminar on Education and Training, Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi-110021**
December 15-17, 1988	National Conference on Fluid Mechanics and Fluid Power.	To provide a forum for exchange of information on topics in fluid mechanics and design, research and development activities in areas like power generation, aerodynamics, fluidics, biomechanics, etc.	Harcourt Butler Technological Institute, Kanpur.	Dr. N.L. Kachhara, Organising Secretary, 16th National Conference on Fluid Mechanics and Fluid Power, Mechanical Engineering Department, Harcourt Butler Technological Institute, Kanpur-208002

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

CURRENT DOCUMENTATION IN EDUCATION

A List of Select Articles culled from Periodicals received in the AIU Library during September, 1988

EDUCATIONAL PHILOSOPHY

Chaddha, D.K. Self-concept of teachers and their emotional adjustment. *Indian Edn! Review* 23(1), 1988, 61-8.

Gupta, G.S. Fundamental dimensions of creativity. *Indian Ednl Review* 23(1), 1988, 51-6.

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Ewell, Peter T. and Boyer, Carol M. Acting out state-mandated assessment : Evidence from five states. *Change* 20 (4), 1988, 41-7.

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Hutchings, Pat and Reuben, Elaine. Faculty voices on assessment : Expanding the conversation. *Change* 20(4), 1988, 48-55.

Marsh, David D. and Glassick, Judith M. Knowledge utilization in evaluation efforts : The role of recommendations. *Knowledge* 9(3), 1988, 323-42.

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Haywood-Farmer, John and others. Using simple simulation models to manage sports services. *J Sport Management* 2(2), 1988, 118-28.

Hunnicutt, David. Integrating quality circles into college athletic departments. *J Sport Management* 2(2), 1988, 140-5.

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Grubb, W. Norton. Vocationalizing higher education : The causes of enrolment and completion in public two-year colleges, 1970-1980. *Eco Edn Rev* 7(3), 1988, 301-19.

Paulsen, Michael B and Pogue, Thomas F. Higner education enrolment : The interaction of labour market conditions, curriculum, and selectivity. *Eco Edn Rev* 7 (3), 1988, 275-90.

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ADULT EDUCATION

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Ranson, Baldwin. Rural education and economic development in China, Mexico, Japan and the United States. *Comp Rev Edn* 32(2), 1988, 213-25.

Ubaidullah, M. Population education : Knowledge and attitudes of NAEP participants. *Indian Ednl Review* 23(1), 1988, 68-73.

COMPARATIVE EDUCATION & COUNTRY STUDIES

Finn, Chester, E. Judgement time for higher education. *Change* 20(4), 1988, 35-9.

Tight, Malcolm. Institutional typologies. *Hr Edn Rev* 20(3) 1988, 27-51.

Attention : Universities/Institutes

Bibliography of Doctoral Dissertations 1986-87 is now under compilation. Kindly ensure that information in respect of doctoral theses accepted by your university during July 1986 to June 1987 is sent to the Association as per prescribed proforma latest by 30th November, 1988. For further information, please write to the Deputy Secretary (Library & Documentation), Association of Indian Universities, AIU House, 16 Kotla Marg, New Delhi-110 002.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

BIOLOGICAL SCIENCES

Biology

1. Chakrabarti, Kalyan. *Man, plants and animals : Statistical approach to the bio-ecological study of the forests of West Bengal.* Sambalpur. Dr. S.N. Ratha, Prof., Department of Anthropology and Sociology, Sambalpur University, Burla.

2. Selvan, R. Senthamil. *Immunobiological effects of arecoline, a plant alkaloid.* JNU. Prof. A. Ramesha Rao, School of Life Sciences, Jawaharlal Nehru University, New Delhi.

Biochemistry

1. Goswami, Rajendra Gulabpuri. *Studies on the effect of polyamines, guanidines and hormones on glutathione metabolism in germinating pea (Pisum sativum L) seeds.* Baroda.

2. Jaya, P. *Studies on the metabolism of lipids and connective tissue macromolecules.* Kerala. Dr. P.A. Kurup, Prof. (Retd), Department of Biochemistry, University of Kerala, Kariavattom.

3. Mukhopadhyay, Pampa. *Biochemical and immunological studies on filarial infection in albino rats.* Calcutta.

4. Pachal, Swapna. *The effect of exercises in relation to cerebellum on the gastric secretory function.* Calcutta.

5. Shashikant, C.S. *Role of plasma membrane in DNA synthesis : Identification and characterization of a membrane bound DNA polymerase.* Osmania.

6. Sil, Mira. *Biochemical and immunological studies on different types of brain cells.* Calcutta.

7. Tule, Vinay Krishnarao. *Certain biochemical aberrations in polymorphonuclear leukocytes during arthritis.* Nagpur. Dr. N. Nath, Department of Biochemistry, Nagpur University, Nagpur.

Botany

1. Basu, Muktisadhan. *Genetic studies of some growth parameters in Jute (Corchorus olitorius L.).* Calcutta.

2. Bhowmick, Pradip Kr. *Studies on the plant growth substances in root nodules and nodule bacteria of some leguminous trees.* Burdwan. Prof. Pritisadhan Basu, Department of Botany, University of Burdwan, Burdwan.

3. Chattopadhyay, Sakuntala. *Studies on polyamines and ammonia assimilatory enzymes during germination and root nodule development of Phaseolus mungo L.* Calcutta.

4. Chawhan, Narendrasingh Jagannathsingh. *Contributions towards palaeocene flora from the intertrappean series of India.* Nagpur. Dr. M.T. Sheikh, Department of Botany, Institute of Science, Nagpur,

5. Hajra Molly. *Evaluation of radio protective nature of some chemicals and their role in the recovery from radiation damage in plant systems.* Calcutta.

6. Kar, Rup Kumar. *Studies in senescence and survival capacity upon desiccation of the submerged aquatic weed, Hydrilla verticillate (L.) Royle.* Burdwan. Prof. Monojit Acharyya Choudhuri, Department of Botany, University of Burdwan, Burdwan.

7. Kolhe, Shaila Namdeo. *Effect of physical mutagens on some of the members of Umbelliferae.* Nagpur. Prof. P.K. Deshpande, Department of Botany, Nagpur University, Nagpur.

8. Kundu, Ruma. *An investigation of various cytological techniques in delineating the cell and chromosome behaviour in Chavaceae.* Calcutta.

9. Lal, Girijashankar. *Genetic analysis of quantitative characters in Triticum durum.* Devi Ahilya. Dr. Y.M. Upadhyaya, 68 Prakash Nagar, Indore.

10. Madhab Guru, Kishore. *An investigation into the biology of mycorrhiza associated with Pinus roxburghii under Orissa condition.* Sambalpur. Dr. Gorachand Rath, Prof., Department of Plant Pathology, College of Agriculture, Orissa University of Agriculture and Technology, Bhubaneswar.

11. Mahmood, S.K. *Microbial ecology of rhizosphere and nonrhizosphere soils of Alternanthera sessilis and A. pungens (Amaranthaceae).* Osmania.

12 Manoj Kumar. *Biodeterioration of plywood by microfungi.* Magadh.

13. Mohammad Ali. *Evaluation of aquatic flora in the ponds of Nalanda District assessing the variability induced by sewage pollution.* Magadh.

14. Naik, Poornima. *Comparative morphology and taxonomic value of foliar sclereids in a few taxa of angiosperms.* Bangalore. Dr. T. Ananda Rao, Karnataka Association for the Advancement of Science, Central College, Bangalore.

15. Nistala Padma. *Morphological and histochemical studies in Asteraceae.* Andhra.

16. Panchpatkar, Sushama. *Mycological production of proteins,* Ravishankar. Dr. S S. Joshi, Department of Chemistry, Government Engineering College, Raipur and Dr. (Smt) S. Joshi, Department of Botany, Government Science College, Raipur.

17. Pravabati Devi, Sorokhaibam. *Studies on the nutritive value and anti-carcinogenic activity of bamboo shoot forment.* Manipur. Prof. H. Tombi Singh, Department of Life Sciences, Manipur University, Imphal.

18. Pushap Lata. *Physiological and biochemical studies of in vitro growing shoot tips and histogenetic studies of some woody species.* Panjab.

19. Seetha Rama Prasad, Guttikonda. *Cytogenetical and biochemical studies of an inter specific/hybrid in the genus Nicotiana (N. benthamiana Domin and N. tabacum L.) and transfer of caterpillar resistance.* Andhra.

20. Sengupta, Sunipa. *Effect of some diazotrophic bacterial isolates of phyllosphere origin on wheat plants.* Calcutta.

21. Sen, Manidipa. *Impact of environmental pollution on growth and metabolism of algae grown in mass culture by utilizing biogas waste.* Calcutta.

22. Sen, Saumitra. *Cytotoxic and histopathological effects of Piper betle L. varieties in combination with betel nut, lime and tobacco.* Calcutta.

23. Sharma, Satyawati. *Studies on Ricinues communis Linn and Morus alba Linn : An integrated approach to biomass utilization.* IIT Delhi. Prof. P. Vasudevan and Dr. (Mrs.) Mira Madan, Centre for Rural Development and Technology, Indian Institute of Technology, New Delhi.

24. Sri Rami Reddy, Donthireddy. *Studies on airborne bacteria at Visakhapatnam, A. P., India.* Andhra.

Zoology

1. Balagopalan Ayyar, Chitra. *Adrenal gonad relationship : A histophysiological study in feral blue rock pigeons. Columbia livia.* Baroda.

2. Bhat, K. Lakshmikantha. *Studies on zooplankton with special reference to biofouling from the offshore region of Arabian Sea.* Karnatak. Dr. A.B. Wagh, Head, Marine Corrosion and Materials Research Division, National Institute of Oceanography, Goa.

3. Bhola, Seema. *Observations on Helminth, parasitic in Gallus gallus domesticus in Jabalpur with special reference to histopathological studies.* Durgawati. Dr. O.N. Bharadwaj, Government Science College, Jabalpur.

4. Chaudhary, Ompal. *Biology and management of flat headed borer, Sphenoptera dadkhani Obenberger (Buprestidae : Coleoptera) on peach (Pruns persicae L).* PAU.

5. Datta, Deb Kumar. *Toxic effects of lead and cadmium on the digestive system and kidney of two Indian fresh water teleosts, Mystus vitnatus (Bloch) and Lebeo rohita (Hamilton).* Burdwan. Dr. Gour Mohan Sinha, Reader, Department of Zoology, University of Burdwan, Burdwan.

6 De, Dilip Kumar. *Studies on the food and feeding habit of Hilsa ilisha (Hamilton) of the Hooghly estuarine system and some aspects of its biology.* Calcutta.

7. Deo, Hrudaya Mohan. *Seasonal variation in haematological responses of a tropical anuran (Bufo melanostictus Bloch and Schneider).* Sambalpur. Prof. A. Mitra, Department of Life Sciences, Sambalpur University, Burla.

8. Goswami, Nemai Chandra. *Biochemical and histological changes of drug induced rat liver.* Burdwan. Prof. Subrata Roy, Department of Zoology, University of Burdwan, Burdwan and Prof. Chittaranjan Maity, Department of Biochemistry, Burdwan Medical College, Burdwan.

9. John, M.V. *Studies on pentastomids.* Kerala. Dr. N.M. Antony, Director, Research Division, Mar Ivanios College, Trivandrum.

10. Khatoon, Shaheda. *Studies on the behaviour of chromosomes during spermatogenesis in five species of Coleoptera (Insecta).* Ravishankar. Dr. N. Ghosh, Department of Zoology, Government Science College, Raipur.

11. Krishnayya, D. *On some aspects of serum biochemical changes in Tropidonotus piscator due to Tanque tiara (Linstow, 1879)* infection. Osmania.

12. Kundu, Krishna. *Studies on some Acuariid parasites (Nematoda : Acuariidae) from birds of West Bengal.* Burdwan. Dr. Anadi Prasad Nandi, Reader, Department of Zoology, University of Burdwan, Burdwan.

13. Mahapatra, Anup Kr. *Biology, bioenergetics and phenology of Argina cribraria Clerck (Lepidoptera : Arctiidae)* Burdwan. Dr. Taracharan Banerjee, Reader, Department of Zoology, University of Burdwan, Burdwan.

14. Mathai, Sam. *Effects of hormones and hormone analogues on the ovarian development and vitellogenesis in the paddy pest Spodoptera mauritia Boisd (Lepidoptera : Noctuidae).* Calicut. Dr. V.S. Krishnan Nair, Reader, Department of Zoology, University of Calicut, Calicut.

15. Ramamani, M. *Aspects of biology of spoilage and deterioration during storage af fish and fish products.* Osmania.

16. Ray, Manidip. *Studies on the surface ultrastructures and some biochemical aspects of two intestinal Nematodes.* Burdwan. Prof. Giridhari Majumdar, Department of Zoology, University of Burdwan, Burdwan.

17. Ray, Santanu. *Ecology of littoral larval Dipterans Arthropoda : Insecta) of the mangrove ecosystem of Sundarbans, India.* Calcutta.

18. Singh, N. Ibotombi. *Structure and behaviour of meiotic prophase chromosomes in Indian silkworms, Antheraea and Philosamia species.* Manipur. Dr. S.C. Kundu, Assoc. Prof., Department of Life Sciences, Manipur University, Imphal.

19. Swarndeep Singh. *Effect of hormones on ovarian morphology and lipid biochemistry in house rat, Rattus rattus.* PAU.

20. Watkar, Ganesh Ravichandra. *Mucosubstances in the reproductive tract of two Indian bats.* Nagpur. Dr. M.M. Gadegone, Department of Zoology, Institute of Science, Nagpur.

Medical Sciences

1. Ghosh, Jayasri. *Studies on the role of vitamins in tumour genesis and prevention of cancer.* Calcutta.

2. Pathak, Dharam Pal. *Reactions of arylnitroso and N-Nitrosamines with 1, 1' diacety 1-1, 1', 4, 4'—Tetrahydro-4, 4'—bipyridine (DTB) : An in vitro NAD(P)H and acetylcoa model.* Panjab.

3. Shivashankar, N. *Central auditory evaluation in post traumatic syndrome.* Bangalore. Dr. G.N. Narayana Reddy, Director, NIMHAND, Bangalore.

Agriculture

1. Devendra Prasad. *The economy of fertilizers in intercropping of sugarcane and tobacco.* Rajendra Agrl.

2. Gupta, Suresh Chandra. *Bionomics of sugarcane top borrer, Scirpophage excerptalis Wlk, in relation to host reaction and fertilizer insecticide application.* Rajendra Agrl.

3. Kalita, Prasanta. *Studies on the effect of nitrogen and phosphorus application with and without FYM on late sown rainfed wheat.* HP Krishi. Dr. R.C. Thakur, Department of Agronomy and Agrometeorology, College of Agriculture, Palampur.

4. Thakur, Surendra. *Effect of different growth regulators on bearing of litchi (Litchi chinensis Sonn.).* Rajendra Agrl.

5. Tiwary, Awadh. *A study in agricultural geography.* Magadh.

6. Tomizuddin Ahmed. *Diversity, genetic associations and breeding potentiality of glutinous rice.* Assam Agrl. Dr. G R. Das, Chief Scientist, Regional Agricultural Research Station, Karimganj.

Animal Husbandry

1. Das, Prafulla Kumar.' *Studies on stephanophilarial dermatitis in cattle.* OUAT. Dr. S.B. Tripathy, Prof. and Head, Department of Medicine, College of Veterinary Science and Animal Husbandry, Bhubaneswar.

2. Mahmood Alam. *Pharmacokinetics of ampicillin in buffalo calves, goats and poultry.* Birsa Agrl.

3. Pandey, Sachidanand. *Pharmacokinetics of mebendazole buffalo calves, goat and poultry.* Birsa Agrl.

4. Sinha, Kameshwar Prasad. *Pharmacological and toxicological screening of karanj.* Birsa Agrl.

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A.B. Singh
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University News

MONDAY, NOVEMBER 14, 1988 Rs. 2.50

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(DEEMED UNIVERSITY)
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3RD Novembe 1988

From L to R : Prof. Bruno Dias Souza, Director, School of Planning and Architecture, New Delhi and Prof. G. Ram Red Vice-Chancellor, Indira Gandhi National Open University at the Seventh Convocation of the School of Planning and Architecture (Deemed University).

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IV.	Nuclear Spectroscopy	Ion-atom collisions in solids and its applications to Nuclear Physics; Nuclear Spectroscopy
V.	Chemical Physics	Bio-inorganic chemistry; fast reactions; energy transfer; molecular biophysics; laser spectroscopy
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Advt. No. 25/88

UNIVERSITY NEWS

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Editor :
SUTINDER SINGH

Planning Higher Education in India

S. M. Israney*

The problem of pressure of numbers with which Indian higher education is currently confronted, makes the debate over allocation mechanisms in education specially topical. The quantitative and qualitative planning decisions which are today causing so many headaches for politicians, administrators, educationists and the public, particularly in the field of higher education, present the economist with an opportunity to apply his customary analysis of socio-economic systems.

Such an approach involves borrowing methods which have proved useful in formally analogous situations. It carries with it the danger that the stress on formal similarities with other fields of application will result in a neglect of the special characteristics of the particular field of investigation and that inadequate conclusions will thus be drawn. Conversely, there is the danger of an ideologically motivated exaggeration of the peculiarities of higher education as a socio-economic system, whose goal is to shield it from relevant scientific analysis and criticism.

It is therefore high time that the Government in India, like anywhere else in the world, attempted to determine an optimal policy for higher education. In principle, its objective should be to choose the level and mix of educational outputs which maximizes social welfare to its overall resource constraint, and to the technical and behavioural constraints affecting the higher education system and each other field of public expenditure. A less global, but more in the context of Indian conditions, formulation of the problem would require the Government in India to evaluate the consequences of its expendiure policies to ensure that the social benefits accruing from using resources in any programme are at least as great as those which could be derived from these same resources in their next best alternative use.

Such decision rules, while sound in principle, are of course little used by educational planners in India. Attempts to apply such maximization principles must inevitably encounter enormous practical difficulties in the definition, measurement and social valuation of the inputs and specially outputs of higher education. These difficulties cannot be avoided and will have to be encountered before it is too late. This is because there is already a growing awareness among educational planners that the rate of return on higher education is very low. Therefore, applying our mind to such difficulties may help us to explain why educational planners currently, and for the foreseeable future in India, are likely to see their problem in terms of setting and achieving certain quantitative targets, with only rather vague or intuitive notions of how the target variables enter into the social welfare function. These targets generally refer to the number of places to provide in different courses, at different levels and in different institutions. Currently the implicit normative basis of this target setting exercise in India is that the supply of places should respond to the private demand that arises given certain arbitrarily determined levels of subsidy. This of course is not the only basis for planning higher education. Some would argue that the future educational needs of the economy

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should be the main determinant of the current supply of places—technically known as the manpower requirements approach. The debate about alternative planning methodologies is beyond our scope here.

At the highest level the Government must decide how much of its total expenditure should be devoted to education and how to allocate this total to various levels or sectors of education, including higher education. These decisions depend on the desired rates of expansion of the different sectors and of certain kinds of education and institutions within the sectors. Thus, within the higher education sector, the distribution of students between universities, polytechnics, and the colleges of education, is a major resource allocation decision, which in India according to the 'Programme of Action' document has been resolved in favour of universalisation of education without creating a balance in the provision of university and non-university places.

But some of the planning decisions we are interested in are even more detailed than this. Consider the university sector alone. The government and the universities (through the mediation of the UGC) must answer the following questions about the values of target variables.

(i) What should be the total number of full time equivalent students in the university sector ?

(ii) How should this total be distributed between subjects—either broadly defined as arts based, commerce based, and science-based or broken down into more specific fields of study ?

(iii) How should the total be distributed between undergraduates and postgraduates (and between research postgraduates and those on target courses) ?

(iv) What should be the distribution of the total between full time and part time students correspondence, home and overseas students ?

(v) What should be the change, if any, in the amount, and distribution by subject, of university research ? In India for example, the UGC does not currently address itself specifically to the problem of the optimum mix of the teaching and research outputs for the university sector as a whole or for individual institutions.

Targets specified in terms of student numbers have resource implications. In deciding on the resources needed to fulfil the targets arising from the resolution of questions (i)-(v),the following additional questions rise :

(vi) Are any new universities required ?

(vii) Are new departments within existing universities required ?

(viii) Will new courses be required in existing departments ?

(ix) Should production continue to be diversified, or should some institutions continue ?

All these questions occupy a significant place in the planning of higher education in India and they must be answered first, and that too satisfactorily, before, any planning is proposed for higher education.

Besides the questions concerned with allocation, distributional considerations are also of considerable importance. The egalitarian impulse—which is responsible for the rapid expansion of the education system and especially the student numbers—should also be included in discussion on the financing of higher education. It will nowadays be generally agreed that a restriction of the opportunity to study to those who can afford to pay the costs themselves, without resort to credit, is not compatible with an egalitarion policy.

From this, it is often concluded that total state financing of higher education is conducive to the equalization of income distribution. That is certainly true when compared with the financing of higher education in the nineteenth century. But it does not appear to be correct when campared with the well-known Friedman proposal, which advocates a shift in the cost of education from public at large to the students themselves and as such it affects only those with higher incomes and does not burden those whose income does not exceed the average of all tax payers.

Now we know that in spite of progressive income taxes, small and medium income receivers contribute very large share of the state budget through indirect taxation. Thus compared with the Friedman proposal, the financing of higher education from public funds is undoubtely regressive; the beneficiaries of this state spending belong (a) to a young age-group, and (b) within their age group to a stratum which will later have above average incomes and status. Point (a) adds to the regressive character of state financing of higher education. In a growing economy the younger generation of any period can hope during their lifetime to achieve a higher standard of living than what the older generation are currently enjoying. Thus, taking their lifetime as a whole, the older generation are materially deprived when compared with the younger generation.

(*Continued on page 4*)

THE EDUCATION EXPLOSION

SOME KEY ISSUES

and Technology
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There has been a large body of literature and empirical studies in developed and developing countries on the economic aspects of education since the beginning of Sixties, which revealed that development of human resources is as important as development of physical investment. In India, too, by late 1960's there was general agreement among economists, educationists, planners and politicians that education was a key change agent for moving countries along the development continuum. In view of this changed concept of economic development and due to social and cultural awareness for education, and policy shift from education for privileged and elite class to mass education, there has been an 'education explosion' in India.

As far as higher education is concerned, the dominant feature of post-independence India has been the enormous growth in student numbers and institutions. According to the data published by UGC in 1984, the number of students enrolled in all the universities has increased from 1.7 lakhs to 31.4 lakhs—eighteenfold increase—between 1950-51 and 1982-83, which is estimated to increase to 5 million by the end of this century. During the same period the number of universities increased from 28 to 133. The number of colleges increased from 695 to 5039 i.e. seven fold increase. The total number of teachers in all these colleges and universities increased ten-fold from 21,264 to 2,11,757. Thus the rate of expansion of universities and colleges has followed the rate of inflation in the country rather than the rate of growth of real income. National income increased at 3.3% whereas the number of universities has increased five times over three decades.

If quantitative expansion is an indicator, the post-independence period can be considered to be highly impressive, but as far as qualitative aspect of higher education is concerned, the story is not inspiring. There are pressing problems, which have arisen out of numerical growth of higher education and so require urgent solutions.

(1) The broadening of the access of higher educational services to all, irrespective of ability or merit, deteriorated the quality of education, Thus, the phenomenon of diminishing returns appears to have gripped the higher education sector.

The universities have to cope up with different problems due to increasing numbers. One is the problem of providing adequate infrastructure to large number of students. The implication is that quality and standards suffer. Quality of teachers also deteriorates; problem of finding committed and qualified teachers. Second problem is the lack of academic motivation to large number of students. Students come to university-college for pass time, white collar-job or social status symbol. Problem arising out of this is student dissatisfaction and student unrest on campus.

The third implication of increasing numbers is the superficial link between degree and jobs. The obvious result is a 'substitution effect' i.e. the replacement of the less educated from their jobs by the more educated. The net result is a devaluation of higher education, which stems from the very expansion of higher education and proliferation of degrees/diplomas. The increasing numbers have also created the problem of educated unemployed.

(2) Our present system of higher education does not meet the need of our changing society and economy. There are five areas in which the existing system is not related.

(i) lack of awareness of what the nation is attempting to do and lack of sense of commitment to it;

(ii) failure to cultivate a sense of moral and social responsibility through character building;

(iii) instead of promoting social and national integration, many features of present educational system encourage divisive tendencies;

(iv) lack of relationship to productivity; and

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(v) failure to appreciate the importance of rural economy and agriculture and also the failure to meet local needs.

(3) System of higher education is passing through the crisis of mounting costs and growing dependence on governmental resources and the consequent erosion of the autonomy of educational institutions.

(4) The entire system of higher education is examination oriented. The structure of courses is traditionally determined and lack diversification to meet the changing socio-economic demands of our country.

(5) Judging investment in education from the criteria of cost-benefit ratio, university education ranks lowest in hierarchy of our education system. The ratio rises as one goes down the ladder to the level of primary education. Thus a sizeable investment in higher education has thus been a waste. Evidence of this wastage is to be found in educated unemployment.

Despite the impressive quantitative expansion an the claim that India has the third largest scientific an technical manpower in the world, after only USA an USSR, the whole system of higher education is proving to be self defeating and irrelevant for changin needs of our country.

In the context of new education policy, a re-thinking is necessary for achieving equity, excellence wit relevance and efficiency. As far as excellence wit relevance is concerned, excellence in education ma not always be a function of numbers only. On th contrary, it is a function of many facets. It involve institutional consolidation, fostering of autonomy t colleges, restructuring of courses with relevance improving teaching-learning process, orientation o teachers, strenghthening of research, and providin infrastructural facilities to students. The system o higher education will work efficiently with the judiciou combination of above factors. The challenge o education can be met by collective endeavour o educational planners, policy makers, teachers an students. □

Planning Higher Education in India

(*Continued from page 2*)

The use of public funds for student finance is on balance a transfer from the old to the young, and therefore operates against an equalization of material life chances. As well as this regressive intergenerational distribution effect, there is also regressive intragenerational effect mentioned under (b) above. Those with the best economic and social prospects are financially aided at the expense of thier contemporaries.

Thus, since the corporate sector is the ultimate beneficiary of human capital, higher education system should conform to the market model, which would look something as under :

The most important effects be that the student (a) would be free to choose his subject and place of study, and (b) would actually be welcomed by the department, faculty or institute which be chooses. In relation to the institution, he would be in the position of a moneyed and sought after customer.

This does not mean a general lowering of standards, for in the long run, the social and economic value o a qualification would correspond to the attractivenes of the institution which offered courses for it.

Moreover, from the point of view of the State there would not only be adequate freedom for initiative but actually a strong tendency to seek innovations since successful innovations would bring much greate rewards for the innovation in this system than i others.

To this system may be added further an education cess or tax. This is of course not the place to set out calculations on the quantative implications of market model for higher education. The educational tax which would have to be levied on the differential in later income traceable to the education received, in order to finance the cost of fees and maintenance would in general be at a rate not exceeding 10 per cent. In all probability, a tax rate substantially below 10 per cent would be typical. □

ONE YEAR OF AUTONOMY

Sr. M. Winifred*

National Policy on Education 1986 has stipulated that autonomous colleges will be helped to develop in large numbers. There are around 70 autonomous colleges in the country. This new column, "Autonomy in Action" is being launched to help autonomous colleges share their experiences of autonomy, disseminate information about the innovative needbased courses introduced by them as also to help the authorities—university, University Grants Commission and policy makers in the Ministry of Human Resource Development get the necessary feedback on the scheme. We hope the new column will be liked by our readers.

We will welcome autonomous colleges share their experiences of autonomy through the columns of University News.

Andhra University conferred Autonomous Status on the St. Theresa's College on 15-6-1987. Autonomy has been a stimulus which has infused a new climate of enthusiasm and endeavour into our teaching-learning process.

Background

St. Theresa's College was the First Private Women's College to be established in Andhra Pradesh way back in 1953. It is managed by the Catholic Sisterhood of the Sisters of St. Ann, Secunderabad. Beginning as an Intermediate College with 8 students on rolls, the college has expanded into a multi-faculty college with approximately 1,000 Inter students, 1,000 degree students and 50 postgraduate students. It has 2 hostels with about 700 resident students. This large group of staff and students though hailing from different castes, language and religions forms a harmonious and academically effective community.

Aim of the College

The chief aim of the College is to provide a facilitating environment for the development of women of character, committed and equipped to contribute to the progress of the nation, especially of its weaker sections. Autonomy we consider a great gift, giving us freedom to shape our curriculum and programmes to fulfil this aim and the objectives flowing from it.

Distinctive Features

(*1*) *New Administrative Structure*

An outstanding feature of the last year was the establishment of the new structure for administration. Our staff are now more closely involved in administration through membership of the various statutory and advisory bodies. In fact the first meeting of the Academic Council and Boards of Studies were historic events which brought about a new sense of purpose and responsibility in the staff.

(*2*) *Staff Seminars*

A highly committed and effective team of staff took up with dedication this new challenge of autonomy and generously shouldered the extra burdens involved. They were further stimulated to a positive and dynamic involvement in autonomy through the three important 5-day seminars that were held at the beginning, at the middle and at the end of the academic year. The themes were on the objectives of autonomy, evaluation, updating of syllabus and dynamic teaching strategies. The resource persons were experienced staff from the Madras Loyola College, from Hyderabad NAARM and from St. Joseph's College, Bangalore. In addition, the staff were deputed to various refresher, updating and self-renewal programmes.

Innovations

Semester System

From the academic standpoint, the most distinctive feature of 1987-88 was the introduction of the

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semester system. The year was divided into 2 semesters of 16 weeks each. Regular attendance was required and students were motivated by the allotment of 10 marks for attendance commensurate with their presence.

Evaluation

Another feature was the introduction of continuous assessment in place of annual examination. 40% of marks is allotted for continuous assessment and 60% for semester end examination. The continuous assessment is based on the marks of 2 periodicals and 1 assignment/record book, etc.

Semester End Examination

For the first semester the paper setters and the examiners were internal. There was spot valuation. For the second semester also the same system was adopted but there was double valuation by random sampling in four subjects—Botany, Chemistry, Economics and English. A sample of about 30 answer scripts in these subjects were sent to external examiners but the marks were put on a separate sheet. It was encouraging to note that on the whole the two sets of marks tallied, our staff being more strict. However the Economics staff gave 7 or 8 marks more than the external in a few cases.

New Climate—Objective Based Teaching

Alongwith the semester pattern and continuous assessment the next distinguishing feature of the year was the new climate it generated. Stimulated by the Orientation Seminar-cum-Workshop and challenged by the new autonomous status, the College made a discernible shift from mere routine teaching and learning to a dynamic, creative teaching and learning approach. This dynamic approach was sustained and undergirded by the linkage made by each department between objectives, teaching strategies and evaluation.

Common core syllabus was adopted but the course content was divided into units and the objectives were formulated based on the National Institutional goals. The teaching-learning strategies of each lecture period were then suitably planned. The teachers felt responsible to raise the quality of the teaching-learning process and the students were motivated to cooperate by giving of their best.

Dynamic Teaching Strategies

The dictation of class notes was given up and students were guided and advised to prepare their own notes. Classroom seminars, preparation assignment and record books made the students the Library much more frequently. Frequent q and objective type tests were held. For e.g. History students had role plays on characters l Napolean and Mock session of the Paris Peace Co ference.

Streaming

One innovating feature needs to be mention namely, streaming introduced for the students of t General English class. After a pre-test they we divided into 3 streams and special efforts was given the second and third stream for the improvement Language skills of writing and speaking.

The good effect of the autonomous system was obvious change in the study habits of the studen They frequent the Library more often and are se doing regular study. Also there was a gradual diminishing fear of examination.

New Courses

Autonomy has led to the starting of two ne courses of Computer Science and Horticu ture. Very effective subject-wise seminars were he and marks assigned for the students participation.

A young entrepreneur of the town gave the Secon B.Com. students a regular course on Business Corre pondence. The pre-school education students co ducted a model nursery school for 10 days.

The Telugu General language students had a lesso on journalism. For a practical application they fo med an editorial board and ran a college dai newspaper for 1 month. Not to be outdone th B.Com. students began a college monthly new paper. Three editions have been issued. Article include interviews of staff, reporting on college new quiz, etc.

The staff too are eager to participate in progran mes for their updating. Some of them have taken u M.Phil. and participated in academic refresher cou ses. Three of the staff attended a Masters' Trainin Programme in self-renewal and three attended sem nars on aspects of value education. In a wor autonomy has been an enriching experience.

Co-curricular Activities

(a) Field Work/Community Service

Under Autonomy, in order to give our students more practical orientation, it was proposed to intr duce some element of field work. Some of the departments made field trips to the telephone exchange, water works, bacon factory, handicapped homes, etc. The English department took the special English students to visit the Managelppudi Beach and then encouraged them to write poetry on the sea. Home Science students visited the Leproscrium, Government Hospital, etc.

(*b*) *Community Service* was also undertaken through the NSS

(i) This year an additional NSS Unit was opened. During the Dasara vacation a 10-day camp was organised for each unit and 100 students were exposed to the Social reality and rendered some forms of community service like shramadan, hygiene talks to the women, etc.

(ii) Another NSS camp was held in Nyampalli from 2-4-1988 to 11-4-1988. The students gave assistance to villagers in repairing and building their houses.

Besides this during the year, students visit regularly two villages and a small slum.

(*e*) *Womens' Cell*

Students who did not join NSS became members of a new unit of cell called Teresian Mahila Vikasa Deepika. They had to study women issues as well as do something concrete for the upliftment of women. The cell was inaugurated by the Governor of Andhra Pradesh. The students had panel discussions on Sati, guest lectures and quizzes. A 4-day Rural Womens' Camp was held in Duggirala village where the students shared with the women their knowledge of low-cost food, hygiene and encouraged them in the saving habit, etc.

Cultural Activities

The first year students participated in all the co-curricular activities of the college. On 18th January, 1988 they celebrated Ugadi with a special poetry session where they read their own compositions in Hindi, Telugu and English. They joined the final year students in the celebrations of a literary Week from 22nd February, 1988 and enacted scenes from Shakespeare's drama and took part in the Quiz programmes. They gave speeches on Womens' Day programme on 11-3-1988 and took part in the Kavi Sammelana on 8-3-1988.

Seminars

They had a one day Seminar on Strategies in Adult Education conducted by Dr. Subba Rao, Prof Andhra University. They had a two day seminar on Family Welfare by the D.H.H.O. unit.

Personality Develoment Camp

Autonomy offered the rare opportunity of innovating a special programme focussed on the less tangible aspects of values and personality development. Under Indian heritage and culture 10 marks were allotted for a special five day personality development and leadership camp. This was a 5-day "Live-in Programme" for all the 220 autonomous students. They were given the opportunity to develop their talents and grow in ledeaderhip through talks, group discussions, role plays, questionnaires, etc.

Hurdles

The implementation of autonomy has also raised a few hurdles :

(1) Financial : The U.G.C. has not yet released 2/3rds of the grant promised for autonomy for 1987-88. This uncertainty prevents efficient planning.

(2) The D.H.E's regulations make in very difficult to continue autonomy because the number of staff will be drastically reduced. The duration of practical hours is reduced to 2 hours. Teaching workload is increased to 20 teaching hours and the sections strength is 60 for science and 80 for arts and languages. Consequently the experience trained staff are scheduled to be transferred away from the college.

(3) Any major modification of the syllabus cannot be undertaken as it may put obstacles for students admission to Postgraduate courses. The same applies to new combinations. ☐

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

Housing the Millions

Prof. G. Ram Reddy, Vice-Chancellor, Indira Gandhi National Open University, emphasised the housing problem "because it is one of the major national problems and also because I feel it is in the execution of such projects that the application of the knowledge and skills imparted to the architects by the schools of architecture is best seen". Prof. Ram Reddy was delivering the Convocation Address at the Seventh Convocation of the School of Planning and Architecture, New Delhi. "Various building projects in the country could be a rich source of feedback for these schools in evaluating and improving their academic programmes", he added. Excerpts

One has to look at the role of School of Planning and Architecture, and other similar institutions, against the general background of the role of a university in a society. There are different views about such a role but to my mind it should play such a role where, to quote Whitehead, the gap between the "adventure of thought" and "the adventure of action" is reduced. Eric Ashby describes the dual nature of the contemporary university as follows:..."the word university stands for something unique and precious...: a leisurely and urbane attitude to scholarship, exemption from the obligation to use knowledge for practical ends, a sense of perspective which accompanies the broad horizon and the distant view, and opportunity to give undivided loyalty to the kingdom of the mind. (At the same time)... the university is an institution with urgent and essential obligations to modern society; a place to which society entrusts its most intelligent young people and from which it expects to receive its most highly trained citizens; a place which society regards as the pacemaker for scientific research and technological progress". It is no use saying that the university is a mere produce of ideas without reference to their application. The policy makers need new ideas to meet the ever growing problems—some are old, some are new.

The expectation is that the academics supply not only the ideas but also their application.

The School of Planning and Architecture, New Delhi, enjoys high national reputation for the all round good work that it has been doing for over four decades in the realm of Planning and Architecture. It is a matter of legitimate pride for the faculty and students that the School has made commendable efforts to consolidate and broaden the sphere of its academic and research activities to cover inter-related fields concerned with man-made environment such as architecture, housing, transport planning, urban and regional planning, urban design, landscape architecture and building engineering management.

It is gratifying to note that during the last three years the School has been able to break new ground by developing integrated courses with common core subjects providing wider choice of electives. and diverse streams of specialisations and bringing about rationalisation of course contents and improvements in the evaluation system.

Planning and Architecture have developed as distinct professional disciplines all over the world, and there is increasing awareness of the importance of these disciplines even in the develoding countries. We have a rich heritage in architecture. If we look back to the history in our country, we can name a number of monuments, mosques, temples, forts, palaces, public buildings, etc., which are well known for their rich architecture. These include fine examples of Islamic Architecture, Temple Architecture and British Architecture. But Architecture as a professional discipline is a recent phenomenon. At the time of independence, we had only one school of architecture and just about 300 architects. With the all-round progress after independence, both planning and architecture received due attention of the Central and State Governments with the result that at present we have over 40 schools of architecture and 8 schools of planning. But, a look at the location of the existing schools of architecture and planning shows considerable imbalance in the spread of schools in our country. This would probably get rectified with the growing demand for architects. The increase in the number of schools, is no doubt, indicative of considerable progress but it is not adequate to meet our growing demands. In order to cope with the future demand we may have to increase the intake capacity of existing schools and open some new schools.

However, apart from the expansion, of the facilities of architectural education, we must also make earnest efforts to improve the quality of education being imparted in the existing schools. We have some very distinguished and well known architects in our country, and I am sure if they apply their minds to this problem they will be able to give a new direction to the development of relevant courses and curricula, and the attainment of excellence. Knowledge in every field is growing fast and we must keep ourselves abreast with the latest developments. This would be possible only if we keep on reviewing and evaluating the courses from time to time, introducing new and relevant courses to meet new demands and organising updating courses for the teachers. Education now-a-days has to be regarded as a continuing life-long process, particularly in the professional fields. This concept has come to be accepted even in the highly developed countries, and for developing countries it is all the more necessary. We should not mind discarding some courses which have become obsolete. There should always be fresh thinking and open approach on such matters. It may mean some extra work for the teachers but it would certainly yield rich dividends in professional attainments.

Architecture, particularly in respect of the housing schemes, must be related to realities of what people need and can afford. One of the common complaints that people have about some houses constructed under housing schemes is that little thought is given to the local climatic conditions and wind directions etc., with the result, that full potential of the climatic environment is not exploited, sometimes, resulting in utter discomfort to the occupants. Sometimes, adequate attention is not paid even to basic ventilation and the rooms are rather dark and gloomy. Some of these houses may be good to look at but functionally they are not good enough. This is a case of introduring innovations at the cost of basic comforts and needs of the occupants of buildings. I think the architects must ensure that the buildings they design are functionally comfortable and relevant to the needs and resource of the society. An involved architect user interaction would always promote mutual understanding and result in better buildings.

Housing is one of the major problems that our country is faced with. The Central and State Governments have launched a number of housing projects in the cities and towns but much more needs to be done to cope with the the demand. We have to provide houses for millions of our populations and the houses have to be within their means. A large number of people who are continuously migrating to the urban areas require housing relevant to their needs and resources and we must keep this aspect in mind. It would facilitate their adjustment to the new environment. Cost is a major factor in this process. This would necessitate our developing new and economical, preferably indigenous building techniques and materials. It is good that some organisations like ASTRA—the Application of Science and Technology for Rural Areas unit of the Indian Institute of Science, Bangalore, are conducting experiments in developing cheap building materials. New approach to mud architecture and of using hollow bricks would need to be popularised at least in the villages and the towns. Even in large cities, subject to the availability of land, the middle and low income groups of people should be encouraged to build new technology mud houses or hollow brick houses. Such traditional building materials have distinct advantages such as low costs, easy availability, cheaper and easier maintenance, etc. People from rural areas are familiar with such materials and they should be able to build and maintain such houses with self-help. It is a stupendous task to provide houses to the millions in the country. But it has to be done. It calls for low technology and more self-help.

Another source that needs better exploitation is the solar energy. Man had been making use of solar energy for centuries in one way or the other. Now that we are facing shortages of energy and of expendable fuels, we should explore new techniques of harnessing the solar energy to overcome this problem. Though we have begun making use of solar energy in building solar heater to ensure natural heating of houses in winters and cooling during summers, as also in providing domestic hot water supply in a small way, a lot needs to be done in this regard.

It would be very necessary to have a thorough and detailed planning to coordinate the various activities involved in our building programmes. That calls for team work. The planners, the architects and the engineers must work in close collaboration to ensure successful completion of these projects. Prior to planning, the team must obtain reliable information about the micro climatic conditions, make detailed local observations and ascertain the socio-cultural and economic background of the prospective occupants, more particularly in the field of housing.

I have purposely emphasised the housing problem because it is one of the major national problems and also because I feel it is in the execution of such projects that the application of the knowledge and skills imparted to the architects by the schools of architecture is best seen. Various building projects in the country could be a rich source of feedback for these schools in evaluating and improving their academic programmes.

Such projects should also generate research studies and the schools should be actively involved in them. That would make education more application-oriented and related to the environment. It would help the students acquire first-hand practical knowledge of problems in the field and motivate them to suggest solutions to those problems. The Council of Architecture, and other professional institutions should also encourage research activities. In fact it should, in the light of its vast experience and axpertise, identify some distinct research areas and institute research fellowships to encourage architects to do intensive research in those areas.

In view of the close link that architecture must have with environmental science, the vast possibilities of the application of computer to architectural education, the invention and adaptation of new building materials and such other factors, I strongly feel that this area should be further strengthened. Research and improvement of architectural education must be given top priority. It would help in generating fresh thinking and improved skills.

In view of explosion of knowledge in all walks of life, continuing education programmes for teachers, planners, and the architects are of utmost importance for improving the quality of education. The faculty development programme should also encourage research by teachers. This would ensure academic growth of the teachers. In order to make the continuing education programmes extensive and effective, we should use the distance education methodology. An added advantage in adopting this methodology would be that the teachers and working architects will be able to update their knowledge and skills without disrupting their work.

Distance Education has come to be recognised as an academically and economically viable alternative system for providing continuing education or updating and enrichment courses for professionals. The advantage in this system is that we can pool expertise from all over the country for developing curricula and the course materials. The printed course materials could be supplemented by videos, audios and television programmes. It should be possible to introduce even Master's level courses for working architects through the Distance Education methodology. In quite a number of advanced countries highest level of technical and professional courses are available through the Distance Education System and these programmes have been very successful. Indira Gandhi National Open University would be happy, if there is a demand, to help in developing Distance Education Programmes in Planning and Architecture including the continuing education courses.

Apart from the issues of qualitative improvement of education in planning and architecture, research, faculty development through continuing education programmes, housing environment, and distance education programmes in these areas, some of the other issues pertaining to education in planning and architecture that need to be looked into are :

- the role of computers and their impact on future of planning and architecture.
- some autonomy to the schools to bring in innovations in curriculum development in keeping with the tastes, demands and local environmental conditions in their regions.
- self-employment entrepreneurship schemes for young architects.
- ensuring the benefits of professional architecture skills to both urban and rural population.

Looking at the haphazard, adhoc, directionless and the suicidal trends in the growth of our towns and cities, one feels that something drastic needs to be done. *Rose water surgery* will not do. The position of the town planner and the architect needs to be strengthened in planning our cities and towns; they need to be provided with teeth. □

विद्यार्थियों / अध्यापकों के लिये शुभ संदेश

पठन-पाठन प्रक्रिया में सुविधा के लिये भारतीय विश्वविद्यालय संघ कई वर्षों से स्नातक व स्नातको
स्तर के विभिन्न विषयों पर अंग्रेजी भाषा में प्रश्न-बैंक प्रकाशित करता रहा है। इन प्रकाशनों में उपल
सामग्री एवं सूचना शिक्षकों एवं विद्यार्थियों के लिये अत्यन्त उपयोगी सिद्ध हुई है।

हिन्दी भाषी प्रांतों के शिक्षकों एवं विद्यार्थियों की लम्बे समय से चली आती मांग को पूरा करने के
प्रश्न-बैंकों की इस श्रृंखला को हिन्दी भाषा में प्रकाशित करने का हमारा यह पहला प्रयास निश्चय
लाभप्रद सिद्ध होगा। इसी आशा के साथ प्रस्तुत है :

जन्तु विज्ञान (Zoology)	मूल्य रु० 100.00
रसायन विज्ञान (Chemistry)	,, रु० 160.00
वनस्पति विज्ञान (Botany)	(प्रकाशन में)

अधिक जानकारी के लिये लिखें अथवा सम्पर्क करें —

अवर सचिव (प्रकाशन)
भारतीय विश्वविद्यालय संघ
ए.आई.यू. हाऊस, १६ कोटला मार्ग
नई दिल्ली-११०००२

Awadhesh Pratap Varsity Offers MBA

The Awadhesh Pratap Singh University has started an MBA Programme from October this year. The objectives of the Programme are : (i) to conduct regular courses in Management at the Postgraduate level; (ii) to build up knowledge of successful Indian management practices through research; (iii) to develop case studies and other teaching material from local situation; (iv) to develop awareness of universal application of management principles by (a) organizing Executive Development Programmes, (b) providing guidance and Faculty to Executive Development Programmes organized by various organizations, and (c) helping the various organizations interested in management development in all possible ways, and (v) to provide consultancy services in Management to individual concerns and organizations interested in management development.

The programme is of two years duration having two terms each year. The course content consists of First Year, **First Term**: Behavioural Sciences, Basic Mathematics, Financial Accounting, Business Environment. **Second Term** : Personnel Management, Production Management, Financial Management, Marketing Management. **Second Year** : **First Term** : Organization Theory, Managerial Economics, Information Systems, Management Accounting. **Second Term** : Mangerial Planning and Control, Quantitative Techniques, Business Policy, Market Research or Human Relations or Operation Research.

MP Varsities Plan Reforms

The Coordination Committee of Vice-Chancellors of the Madhya Pradesh State universities has decided to hold three-monthly and six-monthly Examinations at the degree and postgraduate level from the next academic year with a view to introducing examination reforms. Weightage would be given in the final examination on the basis of marks obtained at these mid-session examinations. A decision to this effect is reported to have been taken at a two-day conference of the Vice Chancellors, presided over by the Governor Prof. K.M. Chandy. The new pattern is being introduced to improve the academic standard in the State universities and the colleges.

According to another decision, semester system would also be started for the postgraduate classes in the university teaching departments from the next academic session. It was also decided to organise pre-medical and pre-engineering tests only in February every year.

The Vice Chancellors reviewed the extra-curricular activities in colleges and universities and expressed satisfaction at the peaceful atmosphere in field of higher education. It was generally agreed that suitable forum may be provided, making available to students opportunities for creative activities and to develop responsible leadership.

The scheme of autonomous colleges was discussed at the meeting and the committee decided that a Board of Governors may be constituted for each Government autonomous college and standard norms must be laid down for selecting teaching and non-teaching staff for these colleges. It also decided to introduce honours courses in a few autonomous colleges.

Academic Staff College

The Academic Staff College (ASC) established by the University of Rajasthan with the assistance of the UGC in the middle of May, 1988 organised four Refresher Courses for inservice teachers. The courses were on (1) Condensed Matter Physics; (2) Environment—awareness & management; (3) Research in Social Siences—Conventional to modern techniques; and (4) Modern Instrumental techniques in Chemistry. Over 120 University and College teachers, attended these courses.

With the active participation of about forty faculty members, belonging to diverse disciplines, ASC conducted a two-day Search Workshop in July, 1988 to find out the training needs of newly appointed University / college teachers and identify the areas which need special emphasis and fortification in Orientation Courses. The College also conducted two orientation courses each of four week duration for newly appointed University/ college teachers during August-October, 1988 in the Second courses.

Om Prakash Bhasin Awards

Eight scientists have been awarded the 1988 Om Prakash Bhasin Foundation awards in different fields of science, technology and medicine. The scientists are Dr. G.S. Venkataraman and Dr. S.K. Sinha, both from the Indian Agricultural Refearch Institute, New Delhi, for their contributions to agriculture and allied sciences, Dr. V. Jagannathan, head of the biotechnology division at the Tata Energy Research Institute, New Delhi, (biotechnology), P.R. Roy, associate director at the Bhabha Atomic Research Centre, Bombay, (energy), R. Narasimhan, professor of computer sciences at the Tata Institute of Fundamental Research, Bombay, (electronics and telecommunications), Dr. R.K. Bhandari, director of the central building research institute, Roorkee, (engineering transport), Dr. M.G. Deo, director of the Cancer Research Institute, Bombay, (health and medical science) and Dr. K. Kasturirangan. associate director at the ISRO satellite centre, Bangalore, (space and aerospace sciences).

The award carries a sum of Rs. 50,000, a memento and a citation.

News from Agril. Varsities

HAU Introduces Agro-Internship

The Haryana Agricultural University (HAU) has introduced internship for the B.Sc (Agri.) students to impart professional work experience in agriculture. The internship is intended to involve students in the actual day to day agricultural operation alongwith their host farmers.

Each group of 40 students will be allotted to one of the four zones at Karnal, Rohtak, Hisar and Bawal in Mohindergarh district. The University is already running a practical crop production centre for students, since 1974. The students of the final year undergraduate class are introduced to this programme before the start of the academic session.

Each group of five to six students is allotted a one-acre plot in the university farm by draw of lots at random. The students are asked to follow a specific crop rotation of one year. The University arranges for all inputs. The total area, allocated for this programme, is 8.4 hectares and since its implementation, it was put under 200 per cent cropping intensity. The programme "earning while learning" is aimed to develop skill, self confidence and decision making, in the execution of field operations.

The Department of Agronomy of the University is one of the two centres in the country where research projects on farming systems have been going on for the last eight years to optimise the use of land and inputs. The results of the last three years indicate that in case of one-hectare land holding with assured irrigation and inputs available, "mixed" farming of crops combined with dairy farming with three crossbred cows gave highest net return of Rs. 18,267 per year an average. It was followed by "mixed" farming of crops with three Murrah buffaloes when the returns were reduced to Rs. 9,314 per annum. Pure arable crop farming gave the lowest net return of Rs. 5,320 per annum. Under dryland conditions, raising of a goat on grazing was found as the best enterprise as it gave a net return of Rs 4,133. Arable farming and "mixed" farming of crops with two Haryana cows on 1.5 hectares of land each were a losing proposition.

The cropping system research project is another significant work, undertaken by the Department of Agronomy with a view to optimising management practices for crop rotation as a whole. The Department has also realised the importance of weed management as the weed problems have multiplied manifold, with the introduction of high-yielding varieties, increased use of fertilisers and availability of assured irrigation.

However, the singular achievement of the Department remains in the field of cropping patterns for areas having underground brackish water reserves, particularly under arid and semi-arid regions of the State. The researches, conducted so far, have revealed that irrigation with partly saline or alternately saline and normal water could be used for raising wheat yield, subject to pre-sowing irrigation with normal water. Bajra (pearl millet), barley and bajra-wheat have been found as the relatively feasible cropping sequences under brackish water irrigation.

The university has introduced a new variety of bajra, to be known as HHB 67 after research for six years. In the new variety the ears are uniform and the maturity period is early. It is disease resistant and its stem remains green at the harvest time, which can be used as fodder. It is likely to be a boon for rain-fed conditions, prevailing in Rajasthan and in a part of Haryana.

The Department of Agricultural Engineering of the University has also developed IRRI-type manual paddy transplanter. The machine can plant slightly more than a half acre of land per day with the help of two persons. It also reduces the labour for uprooting and cleaning of seedlings for traditional planting.

As a result of two decades of consistent multi-disciplinary research, the HAU scientists have developed techniques to cure a deadly disease of buffaloes known as "Diaphragmatic Hernia" in veterinary science.

Agricultural Extension Training

Narendra Deva University of Agriculture and Technology, Faizabad, in collaboration with the Ministry of Agriculture, Govt. of India, organised a National Mid-Term Review Workshop on Planning Agricultural Extension Training, recently. Mr. Suresh Kumar, Director, National Centre for Management of Agricultural Extension, Govt. of India, who inaugurated the workshop, emphasized the need for preparing case studies, which is a highly effective training method. He said that there was a dire need of documentation of materials for different places so that it could be exchanged between the institutions and extension personnel during the training programme. He added that each state may develop its own programme which may be coordinated at the national level to avoid duplication and parallelism.

Dr. Amar Singh, Director Extension Training, Govt. of I dia highlighted the importance of Mid-Term Review Workshop and said that long-term training programmes would be formulated by each state preferably of 5 years duration, which would help generate adequate resources. He identified important points which need serious consideration of the delegates in order to improve the quality of the training programmes.

Dr. C. Prasad, Dy. Director General (AE), ICAR, who delivered the keynote address, stressed the need of including training programme as a vital component, besides teaching, research and extension in agricultural universities. He added that training is in built component of manpower in developing their competencies and promotional activities. Dr. Prasad emphasized linking the training programme of various institutions in the country to maximum benefit the weaker sections of the society. He said that in the coming future, farmer is going to be the most important component in the entire agricultural development programmes. Therefore, all training programmes should be farmers-oriented. He requested the delegates that villages should be considered to be the laboratories of extension from where the case studies may be collected in scientific manner and used for making training programme more effective. Dr. Prasad stressed the felt-need for developing new training location. The specific plan for training method with the adequate communication support should be made.

The Valedictory Function was presided over by Dr. D.D. Pant, Ex-Vice-Chancellor, Kumaun University, Nainital. Dr. Pant hoped research-oriented knowledge would be disseminated out of the boundary of the University in order to benefit the poor farming community and also in building self-sufficient in foodgrain production in order to feed the increasing population Dr. Kirti Singh, Vice-Chancellor, Narendra Deva University of Agriculture and Technology while summarising the deliberations of different sessions said that there was a great need to utilize the time of training judiciously by the institutions where the trainings are being organised. He also desired that the trainees should be exposed to field problems in order to give them skill oriented trainings.

HAU Plans Resource Book on Haryana

Haryana Agricultural University (HAU) is busy in preparing a comprehensive resource book (status report) on Haryana. The book will include all details at micro level about the natural resources available in the State and will cover types of soil, irrigation intensity, quality of irrigation work, cropping patterns, livestock position, vegetable and horticultural crops and marketing facilities for the produce, etc.

Outlining the contents of the proposed book, Dr. Har Swarup Singh Vice-Chancellor of the university said one chapter would be exclusively devoted to the analysis of constraints in agricultural production and remedial measures for removal of constraints under different agro-ecological situations. The existing research-extension linkages and future strategy for quick transfer of technology would also be covered in this resource book.

About 2,000 farmers have already been contacted for collecting basic information on the existing agricultural situation as well as resources up to block and circle level, adoption of technology and constraints in agricultural production in the State.

Haryana has been divided into two major agro-climatic zones viz Western Zone with less than 500 mm annual rainfall, dominated by light textured soil and comparitively low irrigation intensity and Eastern Zone with more than 500 mm annual rainfall, dominated by an alluvial soil and high, even more than 65 per cent irrigation intensity. Zone-wise resource inventories have been made for the purpose of the report.

As many as eight farming situations in the Eastern Zone and seven in the Western Zone have been identified to help the planners, executors and farmers for developing strategies for agricultural development at micro level in the State.

Based on information collected from the farmers and secondary data collected from different sources, detailed analysis of each of the 15 farming situations is being carried out for suggesting optimum use of land, water, labour and animal husbandry.

We Congratulate . . .

Shri G.S. Randhawa, Vice-Chancellor, Guru Nanak Dev University, who has been elected to the International Executive Committee of the World University Service (WUS), Geneva.

South Zone Youth Festival
A Report

Bharathidasan University, Tiruchirapalli hosted the South Zone Inter-University Youth Festival from October 25-28, 1988 at the BHEL Complex, Trichy. 554 talented youth from 23 universities participated in the Festival and displayed their artistic capabilities.

The Festival commenced with a cultural procession with the university contingents in their best regional costumes. Dr. S. Muthukumaran, the Vice-Chancellor of the host university, took the salute. The Vice-Chancellor, in his inaugural speech, hoped that the youth of our country would continue to consolidate the rich cultural heritage of India. Such Festivals are mementoes because they reassert the dynamism and ebullience of the youth. Shri K. Ramakrishnan, Executive Director, BHEL, felicitated the University for hosting the Festival. Shri Sampson David, Cultural Officer, AIU, outlined the various activities to be organised during the Festival.

The formal inauguration was followed by the Folk/Tribal Dances. Almost all the universities took part in this bewitching item of the Festival. University of Agricultural Sciences, Dharwad gave a lucid performance by delineating a fascinating theme based on the Hunter Dance of Khasi and Garu tribes of Meghalaya. The dance portrayed the tribals going into the forest for hunting and waiting for animals for their food. Right there a deer comes, jumping merrily. The tribals pounce on it and kill it resulting in celebrations so typical of their culture. The second most attractive performance came from the host university in the form of 'Karagam' Folk Dance. Karagam refers to the flowers decked pot carried on the head as a part of worship. Each Karaga dancer carried a brass pot on the head and danced to the accompaniment of Thavil and Nathaswaram, inspiring the dancers to carefully balance the pots on their heads and execute the complicated movements. Both these folk dances were acclaimed as the best two items.

One Act Play, On the Spot Painting and Classical Vocal Solo events were organised on the second day of the Festival. The Mysore and Gandhigram Universities stole the show by their histrionic talents.

The play by Mysore University presented the theme of National Integration in most convincing and realistic way. It depicted that to achieve real integration we should overcome three hurdles i.e. the class conflict, solidarity of different states and conflict among different religions. The play attempted to present existing trends and the circumstances in which we are surrounded and how best we could reach the goal of National Integration.

Gandhigram Rural Institute presented 'Three Pandits and the Dead Lion' drawing the real state of intellectuals today. The story was based on an anecdote from Panchatantra, expressing that intellectuals are not able to fulfil the real needs of human society, but they are never tired of blowing their own trumpets. When it becomes imperative that they should do something, what they create ends as dangers to society.

Classical Vocal Solo was held at the Kalaivani Hall. The universities of Andhra and Annama were adjudged the best. Western Vocal Solo and group events were organised at M.D. Auditorium. Very exciting performances came from Annamalai, Pondicherry and Andhra Universities that made the audience jump on their feet, dancing to the sonorous tunes of the songs.

Third day of the Festival unfolded with the items of Light Vocal, Instrumental, Skit, Mime and a few Fine Arts items concluding with the Classical Dances. Kalaivani Hall was the venue for Light Vocal with an enchanting quality produced by the young grand masters. Kudos to Annamalai and Mysore Universities for getting selected for the National Festival. Skit was yet another event which enthralled the audience. Karnatak University presented the Skit—'Donkey and Religion'—a farcical delineation of the so-called unctuous people. 'Modern Sanyukta' was presented by the Gandhigram Rural Institute showing how the modern Sanyukta fights against conservative ideas and at the same time conserves traditional values. Both these Skits were selected as the best two for the National Youth Festival.

Events of Mime followed the Skits. Host university, Bharathidasan, presented the best item bringing out diversified views of the citizens of modern India. The Mime depicted theme of unity in a spell binding way. The second best university for this event was the Bharathiar University with the presentation 'Man Machine'. The item posed questions—can India go into a 'Rebotic Era' with the country taking a huge unemployment problem? Considering the Indian scenario, are the Robots really necessary? The artists portrayed the situation in a splendid style.

The most gorgeous event of the day was the Classical Dances at the M.D. Auditorium in which almost every university participated. The item started with Bharatnatyam by Tamil Nadu Agricultural University which was followed by very good performances in other forms of Classical Dances. Telugu and Anna Universities came out with splendid performances bagging the best two positions.

The final day of the Youth Festival commenced with the cultural event of the Group Songs (Indian). Seventeen universities participated in this event, rendering one each the folk and patriotic song. Mysore and Bharathidasan Universities stole the limelight with their lively rendition. Simultaneously the Quiz final went off smoothly at the Kalaivani Hall which were finally won by the Andhra and Kerala Universities. Also, a Group Discussion was held on a non-competitive basis on the topic 'Nehru : Architect of Modern India'. There were 14 participants and most of them impressed the audience with their knowledge and superb command of language and diction. Finally, three best speakers were selected, namely, A. Shahnawaz, G. Dinesh, both from Bharathidasan University, and M. Nagraj from the Central University, Hyderabad.

The valedictory session was held at the M.D. 'Auditorium. Prizes were given away to the participants while the contingent officials were given lovely mementoes. □

South Zone Inter University Youth Festival 1988
Bharathidasan University, Tiruchirapalli

25-28 OCTOBER, 1988
RESULTS

EVENT : MUSIC

1. **Classical Vocal Solo**
   Best Two Teams
   A : Andhra University, Waltair
   B : Annamalai University, Chidambaram
   Consolation Place
   A : Central University, Hyderabad
   B : Telugu University, Hyderabad
2. **Classical Instrumental Solo (Percussion)**
   Best two Teams
   A : Madurai Kamaraj University, Madurai
   B : Mahatma Gandhi University, Kottayam
   Consolation Place
   A : Calicut University, Calicut
3. **Classical Instrumental (Non-Percussion)**
   Best Two Teams
   A : Mahatma Gandhi University, Kottayam (Violin)
   B : Mysore University, Mysore (Veena)
   Consolation Place
   A : Kerala University, Trivandrum
4. **Light Vocal Indian**
   Best Two Teams
   A : Annamalai University, Annamalainagar
   B : Mysore University, Mysore
   Consolation Place
   A : Bharathidasan University, Tiruchirapalli
5. **Western Vocal Solo**
   Best Two Teams
   A : Annamalai University, Annamalainagar
   B : Pondicherry University, Pondicherry
   Consolation Place
   A : Tamilnadu Agricultural University, Coimbatore
6. **Group Song (Indian)**
   Best Two Teams
   A : Bharathidasan University, Tiruchirapalli
   B : Mysore University, Mysore
   Consolation Place
   A : Annamalai University, Annamalainagar
7. **Group Song (Western)**
   Best Two Teams
   A : Annamalai University, Annamalainagar
   B : Bharathidasan University, Tiruchirapalli
   Consolation Place
   A : Pondicherry University, Pondicherry

Overall Placement in Music
Annamalai University, Chidambaram

EVENT : THEATRE EVENTS

1. One Act Play

Best Two Teams

A : Mysore University, Mysore
B : Gandhigram University, Gandhigram

Consolation Place

A : Bharathidasan University, Tiruchirapalli

2. Skit

Best Two Teams

A : Karnatak University, Dharwad
B : Gandhigram University, Gandhigram

Consolation Place

A : Mysore University, Mysore

3. Mime

Best Two Teams

A : Bharathidasan University, Tiruchirapalli
B : Bharathiar University, Coimbatore

Consolation Place

A : Andhra University, Waltair

Overall Placement in Theatre Events
Bharathidasan University, Tiruchirapalli

EVENT : DANCE

1. Folk/Tribal Dance

Best Two Teams

A : University of Agricultural Sciences, Dharwad
B : Bharathidasan University, Tiruchirapalli

Consolation Place

A : Mysore University, Mysore

2. Classical Dance

Best Two Teams

A : Telugu University, Hyderabad
B : Anna University, Madras

Consolation Place

A : University of Madras, Madras
B : Bharathidasan University, Tiruchirapalli
C : Mysore University, Mysore
D : Calicut University, Calicut

Overall in Placement in Dance
University of Agricultural Sciences, Dharwad

EVENT : FINE ARTS

1. On the Spot Painting

Best Two Teams

A : Kerala University, Trivandrum
B : Madurai Kamaraj University, Madurai

Consolation Place

A : Bharathiar University, Coimbatore

2. Collage

Best Two Teams

A : Kerala University, Trivandrum
B : University of Agricultural Sciences, Bangalore

Consolation Place

A : Andhra University, Waltair

3. Poster Making

Best Two Teams

A : University of Agricultural Sciences, Bangalore
B : Calicut University, Calicut

Consolation Place

A : Madurai Kamaraj University, Madurai

4. Clay Modelling

Best Two Teams

A : Bharathidasan University, Tiruchirapalli
B : University of Madras, Madras

Consolation Place

A : Bharathiar University, Coimbatore

5. Cartooning

Best Two Teams

A : Bharathidasan University, Tiruchirapalli
B : Agricultural University, Dharwad

Consolation Place

A : Calicut University, Calicut

Overall Placement in Fine Arts
Kerala University, Trivandrum

LITERARY EVENT

Best Two Teams

A : Andhra University, Waltair
B : Kerala University, Trivandrum

Consolation Place

A : Indian Institute of Science, Bangalore

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

HUMANITIES

Philosophy

1. Brijraj. *Sant darshan aur Kabir ka rahasyavad.* BHU. Dr. B.N. Singh, Reader, Department of Philosophy, Banaras Hindu University, Varanasi.

2. Chaudhary, Piyush Kanti. *The need for the study of instruction in philosophy of religion and comparative religion for emotional integration and communal harmony in secular state.* Nagpur.

3. Gopalan, S. *The self and others in the philosophy of Jean Paul Sartre.* Madurai.

4. Mishra, Kedar Nath. *Goswami Vithalnath krit Vidwanmandan ka ek sameekshatmak adhyayan.* BHU. Prof. N.S.S. Raman, Department of Philosophy, Banaras Hindu University, Varanasi.

5. Sakyabhinand, Phramaha Widya. *Buddhism and Marxist ideology.* BHU. Prof. N.S.S. Raman, Department of Philosophy, Banaras Hindu University, Varanasi.

6. Srivastava, Jyotsna. *Acharya Shankar evam Husserl ke darshan mein chetna ka swaroop.* BHU. Dr. R.R. Pandey, Reader, Department of Philosophy, Banaras Hindu University, Varanasi.

7. Unnikrishnan, P.V. *The philosophy of Nataraja Garu : A critical study.* Calicut. Dr. E.I. Warrier, Prof. (Retd.) T.C. 15/394, Jaya Mansion Compound, Vellayambalam. Trivandrum.

Fine Arts

1. Khare, Awadh Behari. *Varanasi ka uttar madhyakaleen Devalaya sthapatya.* BHU. Dr. (Mrs.) K.K. Gopal.

Language & Literature

English

1. Abraham, P.A. *A critical study of the American short story of the twenties with special reference to Sherwood Anderson.* Gujarat.

2. Baksi, Pranati. *T.S. Eliot : His dramatic theory and practice.* Calcutta.

3. Bose, Kavery. *Margaret Laurence : A study in themes and technique.* Karnatak. Dr. M.K. Naik, Senior Prof., Department of English, Karnatak University, Dharwad.

4. Dash, Ramachandra. *Leavis' concept of the cultivated minority : A study of its nature and historical roots.* CIEFL. Prof. S.V. Pradhan, Department of English Literature, Central Institute of English and Foreign Languages, Hyderabad.

5. Gopinatha Kurup, T.M. *Scientific romances of H.G. Wells.* Calicut. Dr. N.A. Karim, 21 Indira Nagar, Peroorkada, Trivandrum.

6. Ibemnungshi Devi, Koijam. *T.S. Eliot as a social critic and thinker.* Manipur. Dr. N. Khagendra Singh, Department of English Language and Literature, Manipur University, Imphal.

7. Om Prakash. *Manohar Malgaonkar : Treatment of history and politics in his fiction.* BHU. Dr. R.K. Banerji, Reader, Department of English, Banaras Hindu University, Varanasi.

8. Pimpalapure, Neelima. *The art of Saul Bellow.* HS Gour. Dr. (Mrs.) Shanti Shivraman, Department of English, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

9. Ramachandran, P. *The evolutionary aspect of Sri Aurobindo's literary criticism.* Calicut. Dr. K. Balaraman, XXVII/III, Town Hall Road, Trichur.

10. Sanyal, Paritosh. *A.E. Housman : A critical study of his poetry.* Calcutta.

11. Shukla, Urmila. *A study of Graham Greens' techniques with special reference to imagery.* HS Gour. Dr. J.S. Mishra, E-7, M-170 Arera Colony, Bhopal.

12. Singh, Moirangthem Mani. *The stream of consciousness technique with special reference to the novels of Virginia Woolf.* Manipur. Prof. S.N. Prasad, Department of English Language and Literature, Manipur University, Imphal.

13. Surendran, K.V. *Case assignment in English and Malayalam.* CIEFL. Prof. K.S. Yadurajan, Department of Extension Services, Central Institute of English and Foreign Languages, Hyderabad.

German

1. Geetna, S. *The reckoning with the Nazi past and the conception of a socialist Utopia in the works of Christa Wolf.* Kerala. Dr. Celine Mathew, Prof. and Head, Department of German, University of Kerala, Trivandrum.

French

1. Zalam, Rajeswari. *Les realites socialies dans L' oeuvre Romansque de Francois Mauriac.* Madurai.

Sanskrit

1. Anand, Aruna. *Contribution of the Principal Jainacharyas to Yoga philosophy.* Delhi.

2. Bhattacharyya, Gita. *Dandyacharya birachita kavyadarsha Bimarshanam.* Calcutta.

3. Biswas, Didhiti. *A critical study of the Aranyakas.* Calcutta.

4. Gautam, Krishnakumar. *Sanskrit sahitya mein Agastya Muni.* HS Gour. Dr. Balashastri, Department of Sanskrit, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

5. Jarumethechon, Thongsookh. *A critical study of the seventh mandala of Rigveda.* BHU. Prof. V.K. Verma, Department of Sanskrit, Banaras Hindu University, Varanasi.

6. Jayashree. *A study of various vidyas in Upanishads.* Osmania.

7. Narasimha Sastry, Ravi Lakshmi. *Patanjalam Maha-Bhasyam-loukika Nyayah : A study.* Andhra.

8. Pandey, Kaushalendra. *Sahitya mein shabdashakti : Ek sameekshatmak adhyayan.* BHU. Prof. B. Bhattacharya, Head, Department of Sanskrit, Banaras Hindu University, Varanasi.

9. Pandey, Upendra. *Paniniya pratyahar : Ek sameekshatmak adhyayan.* BHU. Dr. Ramadhin Chaturvedi.

10. Roy, Kusmavati. *Valmikiya Ramayan evam Kalidas ke Raghuvansh ka tulnatmak prakriti chitran.* Ranchi. Dr. T. Pathak, Reader and Head, B.S. College, Lohardage.

11. Sarma, Chirravuri Sree Rama. *A comparative study of Sastra Deepika and Bhatta Deepika.* Andhra.

12. Singh, Hari Krishna. *Yoga evam ayurvigyan.* BHU. Prof. R.H. Singh.

Pali

1. Chuntharin, Phramaha Choochat. *Buddhappavattivinicchayo.* BHU. Dr. H.S. Shukla.

Hindi

1. Dubey, Anjani Kumar. *Aj ka parivesh aur samkaleen Hindi kavita, san 1960 se san 1986 tak.* BHU. Dr. S.N. Pandey.

2. Gupta, Saroj. *Siyaram Sharan Gupta ke kavya ka samajik evam sanskritik drishti se anusheelan.* HS Gour. Dr. B. Mishra, Padmakar Nagar, Makronia, Sagar.

3. Mishra, Indira. *Bharatendu ke sahitya mein janbhasha evam us bhasha ka uttarottar vikas.* BHU. Dr. Pushpa Agrawal.

4. Saraf, Shobha. *Paramparagat Hindi vyakaran ke adhar stambh : Pt. Kamta Prasad Guru evam Acharya Kishoridas Vajpayee.* Delhi.

5. Sharma, S.K. *Nibandhkar Acharya Hazari Prasad Dwivedi : Ek alochanatmak adhyayan.* Bhopal. Dr. V.M. Sharma, E-6-MIG-7, Arera Colony, Bhopal.

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इन्दिरा गाँधी राष्ट्रीय मुक्त विश्वविद्यालय

INDIRA GANDHI NATIONAL OPEN UNIVERSITY

YMCA CULTURAL CENTRE, 1, JAI SINGH ROAD, NEW DELHI-110 001

Applications are invited from Indian Citizens possessing the requisite qualifications for filling up the following posts in the Pay Scales shown against each plus allowances as admissible under the University rules.

1. REGISTRARS

Scale of Pay : Rs. 1500-60-1800-100-2000-125/2-2500 (Prerevised)

Qualifications : At least 15 years of experience as Lecturer and Reader, of which 5 years should be as Reader, with experience in educational administration.

OR

Persons with comparable qualifications in research establishments and other institutions of higher education are also eligible.

OR

Persons with 10 years of administrative experience and who have qualifications comprable to those required for appointment to the post of a Reader may also be considered.

Specialisations/Desirable : Proven ability of administering academic/research institutions with a depth of understanding of intellectual processes and perspectives of university system with particular reference to distance and open education system. Fellows and Associates of Institute of Company Secretaries will receive due weightage.

OR

Qualifications/experience in editorial work/publishing/printing technology and experience in distribution processes of printed material.

OR

Experience in the work relating to admissions, evaluation and examination system in Universities.

2. LIBRARIAN

Scale of Pay : Rs. 4500-150-5700-200-7300 (Revised)

Qualifications : (a) First or second class M.Lib. Science or M.A./M.Sc./M.Com. plus a first or second class B. Lib. Science or Diploma in Library Science with a Ph.D. degree

or equivalent published work.

(b) At least ten years experience as Librarian or in a responsible professional capacity in a University Library.

3. REGIONAL DIRECTORS

Scale of Pay : Rs. 1200-50-1300-60-1900 (Pre-revised)—Likely to be upgraded.

Qualifications : (a) Good Academic record with doctoral degree or equivalent published work and evidence of being actively engaged in research, innovation in teaching methods and production of material.

(b) Not less than 5 years experience of teaching, research or extension.

OR

(a) Master's Degree in any discipline with extensive exposure and training in Distance Learning, course development, production and organisation of counselling.

(b) Not less than 5 years experience in the administration or in research organizations and educational institutions requiring coordination of research projects, planning and execution of training programmes, and management and organization of student services, documentation centres.

(c) Demonstrated ability and proven experience in relation to academic coordination, liaison with other institutions and involvement in imparting education through multimedia and innovations in distance teaching methods and development of materials.

4. SENIOR SOFTWARE ENGINEERS

Scale of Pay : Rs. 1200-50-1300-60-1900 (Pre-revised)

Qualifications and Experience

Essential : Good Academic record with a doctorate degree or equivalent published work. Evidence of being actively engaged in (a) research or (b) innovation in teaching methods, or (c) production of teaching materials. About 5 years experience of teaching and/or research or work experience in computer applications provided that at least 3 years were as a lecturer or in any equivalent position associated with computer systems.

OR

(a) Master's degree in Computer Science or Master's degree in any discipline with a Diploma in Computer Science or a Bachelor of Engineering in Computer Science/Electronics and Telecommunications.

(b) Minimum of 5 years experience in Computer System Development, Computer Programming and in conducting training programmes in Computer Science/Data Communications.

Desirable : Computer Systems, models and performance evaluation/Software Engineering/Artificial intelligence/knowledge based Systems/Pattern recognition/Digital image process/Micro computer architecture application/computer graphics/excellent oral and written communication ability.

5. Software Engineers

Scale of Pay : Rs. 700-40-1100-50-1600 (Pre-revised)

Qualifications & Experience

Essential : (a) Master's degree in Computer Science or Master's degree in any discipline with a Diploma in Computer Science or a Bachelor of Engineering in Comupt Science/Electronics and Telecommunications.

(b) About 2 years professional experience in Comput Systems Development, Computer Programming or conductin training programmes.

Desirable : Evidence of independently designing and dev loping systems. Exposure to modern tools including rela tional databases and 4 GL's.

6. Copy Editor

Scale of Pay : Rs. 2200-75-2800-EB-100-4000 (Revised).

Qualifications & Experience : (a) A Bachelor's Degre from a recognised University.

(b) Diploma in printing technology from a recognised institution.

(c) Extensive knowledge of copy editing, proof reading, typography, marking of manuscript of various natures for type setting and a good command of the language concerned (English/Hindi) with at least 7 years of experience in the field.

7. Section Officers

Scale of Pay : Rs. 2000-60-2300-EB-75-3200-100-3500

Qualifications & Experience : (a) Master's degree with a good academic record and at least 8 years experience as Sr. Asstt./Assistant in University Administration/Govt. Departments/Public Sector undertakings.

OR

(b) At least second class Graduate with 10 years experience as Sr. Assistant/Assistant preferably in recruitment, establishment, purchase of stores, registration and evaluation and general administration.

General Conditions

The University reserves the right to (i) relax any of the qualifications in exceptional cases and/or in the case of persons already holding comparable positions in a university/research institution on the recommendations of the selection committee; and (ii) consider the names of suitable candidates who may not have applied, on the recommendations of the selection committee.

The University also reserves the right not to fill up any of the vacancies advertised if the circumstances so warrant.

The prescribed application forms can be had from the **Registrar, Indira Gandhi National Open University, YMCA Cultural Centre, 1 Jai Singh Road, New Delhi-110001** on a written request by post and accompanied by a self-addressed envelope (size 13 cms x 28 cms) bearing postage stamps of Re. 1.00. Completed application forms alongwith attested copies of degrees, other certificates, marksheets, published research articles, experience, etc. should reach the Registrar at the above address on or before **19th December, 1988.**

15% and 7-1/2% of the total number of vacancies are reserved for Scheduled Castes/Scheduled Tribe candidates, respectively. They must enclose a certificate issued by the competent authority in support of their claim.

Candidates called for interview from outside Delhi will be paid single second class railway fare to and fro by the shortest route from their place of residence/work.

The University reserves the right to restrict the number of candidates to be called for interview.

Advt. No. 5/Admn/88-89

REGISTRAR

CLASSIFIED ADVERTISEMENTS

UNIVERSITY OF DELHI SOUTH CAMPUS

Advertisement No. 3/88 **Dated : 26th October, 1988**

Applications on prescribed form are invited for the following posts :

Teaching	No. of Posts Professor	 Reader	 Lecturer
1. Deptt. of Biochemistry	—	1	—
2. Deptt. of Biophysics	—	1	1
3. Deptt. of Electronic Science	1	2	1
4. Deptt. of English	1	—	—
5. Deptt. of Genetics	1	1	—
6. Deptt. of Mathematics	—	1	—
7. Deptt. of Applied Psychology	1	—	—

Non-Teaching

1. Console Operator	—	1	(Reserved for S.C.)
2. Technical Assistant	—	2	One post each reserved for Ex-servicemen and ST.

Pay Scales of the Posts

Professor — Rs. 4500-150-5700-200-7300
Reader — Rs. 3700-125-4950-150-5700
Lecturer — Rs. 2200-75-2800-100-4000
Console Operator—Rs. 1640-60-2600-EB-75-2900
Technical Asstt. — Rs. 1400-40-1800-EB-50-2300

Essential Qualifications
Professorship

An eminent scholar with published work of high quality, actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Readership

Good academic record with atleast second class Master's Degree in a relevant subject with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

Five years' experience of teaching in undergraduate / postgraduate classes and/or post-doctoral research work with evidence of published work.

Note : Second Class would mean atleast 50% marks in the subject or equivalent qualifications.

Essential Qualifications for Readership in Electronic Science

Good academic record with first or high second class Master's Degree in Electronics / Physics with a doctor's degree or equivalent published work; Independent published work (in addition to the published work mentioned above) with atleast 5 years teaching experience in Honour / Postgraduate classes essential;

OR

A high academic record with post-graduate qualifications in Electronics/ Electrical Engineering (Electronics)/ Electronic Engineering/Communication Engineering / Radar Communication/ Radio Physics & Electronics, preferably Ph.D. with five years teaching/research/ professional experience.

Lecturership

(a) A doctorate degree or research work of an equally high standard; and

(b) Good academic record with atleast second class (C in the seven point scale) Master's Degree in a relevant subject from an Indian University or an equivalent degree from a foreign University. Having regard to the need for developing inter-disciplinary programmes, the degree in (a) and (b) above may be in relevant subjects. Provided that if the Selection Committee is of the view that the research work of candidate as evident either from his thesis or from his published work is of very high standard, it may relax the requirement of atleast second class in Master's Degree examination in terms of level achieved at the said examination as prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable, a person possessing a good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed.

Essential Qualifications for the Post of Lecturership in Electronic Science

A doctorate degree or research work of equally high standard; Good academic record with atleast second class (C in the seven point scale) Master's Degree in Physics/Electronics from an Indian University or an equivalent degree from a foreign University;

OR

Good Master's Degree in Electronics/ Electrical Engineering (Electronics)/ Electronic Engineering/Communication Engineering / Radar Communication/ Radio Physics & Electronics or a good Bachelor's Degree with three years' professional experience.

Explanation

(1) For determining "good academic record" the following criteria shall be adopted :

(i) A candidate holding a Ph.D./M. Phil. Degree should possess atleast a second class Master's Degree; or

(ii) A candidate without a Ph.D./M. Phil. Degree should possess a high-second class Master's degree and second class in the Bachelor's Degree; or

(iii) A candidate not possessing Ph.D./M. Phil. Degree but possessing second class Master's Degree should have obtained first class in the Bachelor's Degree.

2. Persons having secured atleast 55% or more marks shall be deemed to have passed the examination in the high second class.

Special, Desirable Qualifications

1. **Reader in Biochemistry**

(i) Immunology (ii) Molecular Biology (iii) Membrane Biochemistry (iv) Protein Chemistry (v) Carbohydrate and Lapid Biochemistry.

2. **Reader and Lecturer in Biophysics**

Membrane biophysics, Molecular biophysics, X-Ray Crystallography, or irreversible thermodynamics and its application to biological systems.

Research experience in structural and functional organisation of Membrane supported by publications.

3. **Professor in Electronic Science**

Semi-conductor Devices and materials.

4. **Readers in Electronic Science**

Computer Engineering Semi - conductor Devices/Opto-Electronics. (Preferably with Engineering background and not more than one field).

5. **Lecturer in Electronic Science**

Microwavc Communication/C.A.D./Computer hardware/Opto-Electronics/Semi-conductor Devices (Not more than one from one discipline).

6. **Console Operator in {Electronic Scienee**

Essential Qualifications

(i) The candidate must have atleast second class (not less than 50% marks in the aggregate). Master's Degree in Maths., Statistics, Econometrics, Operations Research or Physics.

OR

Atleast Second Class (not less than 50% marks in the aggregate) Bachelor's Degree in Engg. from a recognized Institution; and

(ii) Similarity with Console Operations.

7 **Technical Assistant in Electronic Science**

Essential Qualifications

The candidate must have B.Sc./three years diploma in Engineering or Electronics.

The candidates will have to produce the original documents relating to their age, qualifications, experience, etc. at the time of interview.

Applications (separate for each post) accompanied by attested copies of Degrees, other Certificates, marksheets, published articles, etc. should be addressed to the Deputy Registrar, South Campus, Benito Juarez Road, Dhaula Kuan, New Delhi-110021. **The summary sheet attached with the application should be typed and complete in all respect.** The last date prescribed for receipt of application is **24-11-1988.**

Note:

1. The 'relevant subject' for the posts in the Department of Biophysics would be any discipline in physical or Biological sciences.
2. It will be open to the University to consider the name of suitable candidates for teaching posts who may not have applied. Relaxation of any of the qualifications may be made in exceptional cases, in respect of all the posts on the recommendations of the selection committee.
3. Canvassing in any form by or on behalf of the candidates will disqualify.
4. Candidates for teaching posts only from outside Delhi, when called for interview will be paid to and fro second class rail fare.
5. The University reserves the right not to fill up any of the vacancies advertised if the circumstances so warrant.

Shardha Nand
OFFICER ON SPECIAL DUTY

GUJARAT UNIVERSITY

AHMEDABAD-380009

Applications are invited in the prescribed form available from the Registrar, Gujarat University, Ahmedabad-380 009, so as to reach him on or before **5-12-1988** for the post of the Director, College Development Council (Tenure Post) in the pay-scale of Rs. 1500-60-1800-100-2000-125/2-2500. (Pay is likely to be revised).

Minimum Qualifications

The candidate must possess a Bachelor's and Master's Degree both at least in Second Class with at least 10 years academic and/or administrative experience.

Notwithstanding anything contained above it will be competent to waive the academic qualifications mentioned above in the case of a candidate who has atleast 20 years of experience of teaching and/or administrative work.

He will be appointed on a tenure basis for three years. He may be reappointed for another term of three years, but not beyond the age of 65 years.

The above post carries Dearness allowance and other allowances as per the rules of the University.

The application form can be had on payment of Rs. 5/- payable in advance either in cash or by Postal Order. Money Order will not be accepted.

K.R. Joshi
REGISTRAR

UNIVERSITY OF CALCUTT

SENATE HOUSE

CALCUTTA—700 073

Advt. No. EST/4/88

Applications are invited for 2 p
of Readers and 2 posts of Lecturers
the Department of Bio-Physics, M
cular Biology and Genetics in
U.G.C. Scales of pay plus allowance
may be admissible from time to t
under the rules of the Univers
Higher initial pay within the grade m
be given to an incumbent in consid
ation of excellence of academic rec
and experience. The University off
triple retirement benefits, i.e. Cont
butory Provident Fund, Gratuity a
Pension as per the University rul
Working knowledge of written a
spoken Bengali is desirable.

Essential Qualifications and Experien

(a) Uniformly good academic care
with Master's and Bachelo
degree with Honours of th
University or equivalent
Physics / Chemistry / Zoolog
Botany Physiology/ Bio-Chemi
try;
(b) Evidence of continuing resear
interest as manifest in publishe
work in journals of repute
any of the three major thru
areas—(i) Bio-physics, (ii) Mole
cular Biology, and (iii) Geneti
and Microbiology;
(c) For Readers teaching at th
P.G. level Post-Doctoral Res
arch.

Desirable Qualifications

Ph.D. in the relevant subjects an
teaching experience at the P.G. leve
for Lecturers.

The Syndicate may relax, if s
recommended by the Selection Com
mittee on specific grounds, the stipu
lations regarding qualifications an
experience in case of candidates pos
sessing exceptionally good academi
records and outstanding capabilitie
The Selection Committee may als
consider suitable qualified persons wh
may not formally apply.

The selected candidates will b
placed on probation for one year whic
may be waived in exceptional case
The appointment shall be subject to th
rules laid down for the teachers from
time to time.

Applications (seven copies) in pres
cribed form (obtainable from the Uni
versity Sales Counter on payment o
Rs. 10/- or by post on sending a sel
addressed Re. 1/- stamped envelope o
28 cm x 12.5 cm. size with a crosse
I.P.O. of Rs. 10/- payable in the nam
of Calcutta University) should reac
the undersigned not later than 28t
November, 1988.

For persons applying from abroad,
submissions of applications in the
prescribed form is not necessary. Suc
candidate may submit seven typed
copies of detailed bio-data with an
application fee of Rs. 10/- within Se
December, 1988.

T.K. Mukherje
REGISTRA

Sanjay Gandhi Post Graduate Institute of Medical Sciences

Post Box No. 375, Rae Bareli Road,
LUCKNOW-226 001 (U.P.)

Advertisement No. 46/88 **Closing Date : 30 Nov. 1988**

Ph.D. PROGRAMME

Applications are invited for selection of candidates for enrolment as Ph.D. scholars in the following specialities;

	No. of Seats
1. Clinical Sciences; (Gastroenterology, Endocrinology, Medical Genetics, Immunology)	04 (01 seat each)
2. Endocrinology (Experimental)	02
3. Genetics	04
4. Immunology	03

Qualifications

The applicants should possess the following educational qualifications in the respective disciplines;

For Clinical Sciences

1. M.D./M.S. or equivalent; or
2. M.B.B.S. with diploma or one year's research experience.

For Endocrinology (Experimental); Genetics & Immunology

M.Sc. in Chemical or biological science subjects or equivalent.

Upper Age Limit

Maximum age as on 1-1-1989 should be 30 years. Relaxation upto 5 years for SC/ST candidates.

Reservation

Reservation for SC/ST candidates exists as per rules. In case candidates belonging to reserved categories are not available, vacant seats will be filled from general list.

General Information

1. The selection will be made on All India basis.
2. The Ph.D. scholars will be designated as Research fellows.
3. Scholarships payable, will be comparable to ICMR rates.
4. The Selection Tests will be held on 18th December, 1988, at SGPGI campus, Lucknow.
5. The selection will comprise 2 question papers, one for aptitude test—40 marks, another for knowledge of subject—40 marks & followed by viva—20 marks.
6. A merit list will be drawn of the candidates who secure 60% marks in aggregate in the above test.
7. In-house candidates who fulfill the eligibility criteria and apply for Ph.D. programme will also have to appear in the Entrance Test. In case selected, they have to work as full time students for a minimum period of two years on leave.
8. The details regarding duration of course, training programme recognition of guide, development of synopsis etc. will be in accordance with Ph.D. regulations of the Institute as approved by the Academic Board.
9. Candidates are requested to send applications on plain paper latest by **30th November, 1988** stating their date of birth, qualifications with year of passing the examination and marks, experience, **names of two referees** alongwith a crossed Bank Draft of Rs. 200/- (two hundred only) payable to "Sanjay Gandhi Post Graduate Institute of Medical Sciences" towards examination fees.
10. Candidates in employment must get their applications duly forwarded.

Prof. B.B. Sethi
DIRECTOR

REGIONAL ENGINEERING COLLEGE

WARANGAL-506 004
ANDHRA PRADESH

Advertisement No. 2/88

Applications in the prescribed form are invited for the following posts so as to reach the Registrar not later than **12-12-88,**

(1) Professors in Civil Engineering, Electronics and Communication Engineering, Computer Science, Chemical Engineering and Metallurgical Engineering, (2) Assistant Professors in Civil Engineering, Electronics and Communication Engineering, Computer Science, Metallurgical Engineering and Mathematics, (3) Lecturers in Electrical Engineering, Electronics and Communication Engineering, Computer Science, Mechanical Engineering, Workshops, Chemical Engineering, Physics, Chemistry and English, (4) Research Engineer Grade-I in Electronics (Assistant Professor's scale), (5) Professor of Education Technology, (6) Senior Project Leader (Entrepreneurship), (7) Registrar, and (8) Deputy Registrar (Accounts.). (Posts at Sl. No. 1 to 6 carry UGC scale of pay and the posts at Sl. No. 7 and 8 carry State Scales). In the case of applications for the posts of Lecturers received from SC/ST candidates, preference will be given to them, if found fit, to the extent of reservation applicable as per college rules. Application forms and details of qualifications and experience required for the above posts can be obtained from the Registrar by sending a crossed Indian Postal Order/Demand Draft for Rs. 5/- drawn in favour of the Principal, Regional Engineering College, Warangal, payable at REC Post Office, Warangal/State Bank of Hyderabad, R.E.C. Branch, Warangal along with a self-addressed stamped envelope (bearing postal stamps of Rs. 2-60.)

PRINCIPAL

UNIVERSITY OF RAJASTHAN

JAIPUR

No. Estt./1/88/15522 **Dated : 31-10-88**

NOTIFICATION

The last date of receipt of application forms in response to Advertisement No. 3/88/T dated 22.9.1988 has been extended upto **21st November, 1988.** The application forms could be obtained by post latest by 14th November, 1988.

REGISTRAR

THE UNIVERSITY OF HYDERABAD

P.O. CENTRAL UNIVERSITY
HYDERABAD-500 134

Employment Notification
No. Rectt/8/88

The University of Hyderabad, a CENTRAL UNIVERSITY, invites applications in the prescribed form for the following faculty positions in the Sarojini Naidu School of Performing Arts and Communication.

1. **Professors :** 3 posts, one each in Dance or Theatre Arts, Fine Arts (Painting) and Communication (Audio Visual) in the Scale of Pay of Rs. 4500-150-5700-200-7300 plus allowances;

2. **Readers :** 3 posts, one each in Dance, Theatre Arts and Communication (Audio Visual) in the Scale of Pay of Rs. 3700-125-4950-150-5700 plus allowances;

3. **Lecturers :** 2 posts, one in Fine Arts (Painting) and one in Communication (Audio Visual) in the Scale of Pay of Rs. 2200-75-2800-100-4000 plus allowances.

The prescribed application form and particulars of qualifications, experience, etc. for the above posts can be had either in person from the Professor & Coordinator, S.N. School of Performing Arts, Fine Arts, and Communication, University of Hyderabad, Golden Threshold, Nampally Station Road, Hyderabad 500 134 or from the Administrative Office of the University at the University Campus, Gachibowli or by post by sending a self-addressed envelope of size 28 cm x 13 cm duly affixing postal stamps worth Rs. 3.00 and superscribing on the top corner of the envelope "Request for Application for Faculty Positions in S N. School" to the Asst. Registrar (Rectt), University of Hyderabad, P.O. Central University, Hyderabad 500 134.

Last Date for Receiving the Filled in Applications is 9th December, 1988.

General

1. Reservations in respect of teaching posts (Lecturers only) exist as per University rules for candidates belonging to Scheduled Castes & Scheduled Tribes.
2. In respect of the teaching posts in Performing Arts (Dance and Theatre Arts) and Fine Arts (Painting), candidates who are traditional or professional artists with highly commendable professional achievements in the concerned subject may also apply.
3. Candidates who had applied for the above posts in response to advertisement No. Rectt/1/88 eated 26-4-88 need not apply again but may, if interested, send their up-dated bio-data. Their applications will be considered in accordance with the revised educational qualifications, experience, etc. for the above posts.

P. Muralikrishna
ACTING REGISTRAR

Netaji Institute for Asian Studies

1, Woodburn Park, Calcutta-700 020

Advertisement No. EAS/04/88

Applications, typed in triplicate, giving full particulars as indicated below, are invited for the following posts so as to reach the Director of the Institute by **30.11.88**

Professor one each in the Departments of (a) **International Relations,** (b) **Economic Co-operation,** and (c) Ethnolinguistics in the scale of pay : Rs. 1500-2500 (likely to be revised) with allowances as per State Government Rules and pensionary benefits where admissible.

Minimum Qualifications : First Class Masters' Degree whith High Second Class Honours or High Second Class Masters' Degree with First Class Honours in the relevant subject and Ph.D. or equivalent research work.

Desirable : Experience of research supervision in the relevant field; knowledge of the history and language of at least one South/Southeast Asian Country other than India.

Age Limit : below fifty.

Particulars required :

(1) Name, (2) Mailing Address, (3) Date of Birth (to be certified), (4) Academic Record (to be certified) giving year of passing, division and percentage of marks obtained, award/distinctions, if any, for all public examinations, (5) Research Experience, (6) Research Guiding Experience (only for Item No. I & II), (7) Publications, (8) Present occupation and salary drawn. (9) A brief scheme of research proposed to be undertaken if appointed.

N.B. : 1. The choice of the Selection Committee may not be confined to those who formally apply. Prescribed qualifications and age limit may be waived in case of candidates found otherwise outstanding.
2. In-Service candidates should apply through proper channel.

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University News

MONDAY, NOVEMBER 21, 1988 Rs. 2.50

L M THAPAR
N C NIGAM

From L to R : Dr. N.C. Nigam, Director, TIET, Mr. L.M. Thapar, President, TIET, Dr. S Varadarajan, Chief Consultant, Planning Commission, and Mr. I.P. Anand, Chairman, Board of Governors, TIET at the Second Convocation of the Thapar Institute of Engineering and Technology (TIET), Patiala.

SCHOOL OF PHYSICS

Tata Institute of Fundamental Research

Visiting Student Research Programme 1989

Leading to

SELECTION OF Ph.D. RESEARCH SCHOLARS FOR 1990

Applications are invited from outstanding research-motivated students who are in the **first year of Master's degree** course (i.e. 1988 B.Sc.) for the Visiting Student Research Programme of the School of Physics of the Institute.

The objectives of this programme are twofold :

(1) to provide young scholars with an opportunity to interact actively with research programme at TIFR and thus strengthen their motivation for a research career, and

(2) to preselect RESEARCH SCHOLARS for the Ph.D. programme at TIFR, commencing in the summer of 1990.

Students chosen under this scheme will have an opportunity to spend about six weeks sometime during the period May 1 to June 30, 1989 working in a research-group in TIFR. Their programme will include guided advanced studies, specific assignments/projects as well as lectures and seminars. This programme is open to the first year M.Sc. students of PHYSICS, CHEMISTRY or APPLIED MATHEMATICS and M.E./M.Tech. students specializing in COMPUTER SCIENCE or ELECTRONICS or ENGINEERING PHYSICS who will have completed only the first year of their Master's degree course by summer of 1989. Students in the final year of these courses are not eligible for participation in this Programme*. The programme is also open to students entering their final year B.Tech. in Computer Science. Participants will be interviewed at the end of the programme and those selected in the interview will be made an advance offer of a position as Research Scholar at TIFR for the Ph.D. programme starting in August 1990, subject to their satisfactory performance in their final M.Sc./M.E./M.Tech./B.Tech. examination. The monthly honorarium for research scholars at TIFR is Rs. 2200/- in the beginning which is normally raised to Rs. 2500/- per month once the initial training period is over. Moreover, those with outstanding performance are absorbed into regular academic positions at TIFR after their Ph.D. or earlier.

Research activities in the School of Physics at TIFR include :

EXPERIMENTAL NUCLEAR SCIENCES	:	Nuclear interactions; high energy particle physics; heavy ions; nuclear reactions & spectroscopic studies etc.
EXPERIMENTAL SPACE SCIENCES	:	Cosmic rays; gravitation; radio, X-ray, optical, infrared and gamma ray astronomy.
EXPERIMENTAL ATOMIC AND SOLID STATE PHYSICS	:	Magnetism; superconductivity; semi-conductor physics and electronics, atomic and ionic collisions, etc.
THEORETICAL STUDIES	:	Elementary particles and fields, nuclear theory: solid-state theory and statistical mechanics, astrophysics; cosmology, etc.
CHEMICAL PHYSICS	:	Bio-inorganic chemistry, energy-transfer; Molecular Biophysics, Fast reactions studies using time domain ESR, picosecond: nanosecond Laser spectroscopy.
COMPUTER SCIENCES	:	Speech and digital systems; theory of programming; distributed programming; experimental programming etc.

The Institute has modern and well-equipped laboratories pertaining to the above areas. Major facilities include (1) the deepest underground laboratory in the world at Kolar Gold Fields for cosmic ray and neutrino experiments and the study of proton decay, (2) a radio telescope at Ootacamund, (3) a cosmic-ray laboratory at Ootacamund, (4) ultra high energy gamma ray observatory at Kolar Gold Fields, (5) very high energy gamma ray observatory at Pachmarhi, (6) balloon launching facilities at Hyderabad for cosmic ray studies, space astronomy and space sciences, (7) facilities for fabrication of balloon and satellite payloads, (8) gravitation laboratory at Gauribidanur, (9) a nuclear accelerator (14UD pelletron), (10) Nd : YAG/dye lasers and FT-NMR spectrometers for solid-state and chemical physics experiments and (11) CYBER 730 and VAX 11/780 computers.

To apply for participation in this programme, send request for application form to the Administrative Officer (Establishment), Tata Institute of Fundamental Research, Homi Bhabha Road, Bombay 400 005, alongwith self-addressed stamped (Rs. 1.40) envelope (size 24 cms x 11 cms) not later than **December 15, 1988.** The last date for receiving the filled application forms is **December 30, 1988.**

Those students, who are chosen for participation in this visiting programme, will be paid return second class train fare from their place of residence as well as a stipend of Rs. 600/- per month. Arrangements will be made for hostel accommodation during the programme.

*TIFR will continue to operate its usual programme of recruitment of Research Scholars in every July, for which candidates completing their final year M.Sc. etc. are eligible to apply.

Advertisement No. 24/88

UNIVERSITY NEWS

VOL. XXVI NOVEMBER 21
No. 47 1988
Price Rs. 2.50

A Weekly Chronicle of Higher Education published by the Association of Indian Universities

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Editor :
SUTINDER SINGH

SECULAR EDUCATION

A. K. Ghosh*

Democracy, socialism and secularism form the basic structure of our Constitution. The State emerged from the primitive societies and combined in itself both the administrative and religious functions. We find this state of affairs in the earliest civilisations of Egypt and Mesopotamia. During the early Christian era also, God and Caesar, i.e. the Church and the State were practically combined or at least the Church wielding considerable authority over non-religious or secular matters.

But the Renaissance completely separated the functions of the Church and the State. In the Parliament of England, the representatives of the ecclesiastical order were called Lords Spiritual as distinct from Lords Temporal, thereby proclaiming that religion represented timeless or absolute values and all other values were ephemeral and hence unworthy. The British monarch is defender of the faith only in name. The Archbishop of Canterbury is the head of the Anglican Church.

In the Arabian World, Islam originally started with the concept of a complete code of life' (*Mukammil Nizame Hayat*, both for '*Deen*' and '*Duniya*') and the first few Caliphs were Heads of State as well as Religion and were called '*Ameer-al-Momineer*'. Later on the monarchy developed and had to give up the religious role : The Caliph was the Head of the State and the *Imam* was the Head of the Religion.

In our country, the roles of the Kshatriyas and Brahmins were clearly demarcated. The dichotomy of the Church and the State is an acknowledged fact of the modern political thought throughout the world. "Render unto Caesar things that are Caesar's and unto God the things that are God's". The mundane affairs of the State are called secular activities and the religious affairs, looked after by the Church, are called ecclesiastical activities. Religion is regarded as the private affair of a man, and the State has nothing to do with it (unless it clashes with the secular activities). A modern State has no religion and it is the quintessence of secularism.

Now let us look at the problem of religious education from the point of view of its history. Although ancient and medieval rulers occasionally patronised art and letters, education for the people in general was never regarded as a responsibility of the State. As such, the question of control by the State of religious education imparted largely through private institutions did not arise. The study of religion was considered an integral part of education and the character of the young was to be moulded according to the religious model. At first the British also fell in line with the classical pattern and Warren Hestings established the Calcutta Madrasa in 1781 and Banaras Sanskrit College followed in 1792. This was however a casual interest in education. A few years later Charles Grants (one of the Directors of East India Company) tried to introduce a comprehensive system of English education but he failed. Missionaries like William Caray did a lot in setting up schools and spreading education.

**Department of English, Falakata College, District Jalpaiguri-735211 (North Bengal).*

When the British rule achieved ascendancy, the State began to evince an active interest in education and at the time of the renewal of the Company's Charter in 1813, the Parliament directed the company to allocate at least a lac of rupees annually towards education. Later on a great debate started between Anglicists and Orientalists whether the medium of instruction should be the English language or oriental languages like Persian, Arabic, Sanskrit or even vernaculars, the languages of the natives. People in general were apprehensive of the imposition of the Christian faith through Western education. However, progressive men like Raja Ram Mohun Roy were for the English education through which modern subjects of study in general and science in particular could be studied. When Lord Macaulay joined the Governor General's Council in 1835 at the time of Lord William Bentinck, he ardently championed the cause of English language as the medium of instruction. He averred : "A single shelf of a good European Library was worth the whole native literature of India and Arabia". His advocacy clinched the issue in favour of the Anglicists. In 1835 the Governor General in Council passed the resolution that (a) the great object of the British Government ought to be the promotion of European literature and science amongst the natives of India and that all funds appropriated for the purpose of education would be best employed on English education alone, and (b) that while the colleges of Oriental Learning were not to be abolished, the practice of supporting their students during their period of education was to be discontinued.

The step was welcomed by the leading Indians of the day, but a petition signed by about 8000 muslims of Calcutta objected to the introduction of Western education and submitted that the evident object of the Government was conversion of the natives to Christianity. The Government however assumed a posture of strict religious neutrality and Lord Bentinck declared that 'interference and injudicious tempering of the religious beliefs of the students, mingling direct or indirect teaching of Christianity with the system of instruction, ought to be positively forbidden'. The famous despatch of Sir Charles Wood in 1854, which laid the solid foundation of modern educational system in India and brought about the Universities of Calcutta, Madras and Bombay in 1857, reiterated the sound principle of religious neutrality by saying that the Government institutions "were founded for the benefit of the whole population of India...the education conveyed in them should be exclusively secular". We know that one of the most important causes of the 1857 Revolt was the apparent denigration of the religious sentiments of the Hindus and Muslims. After the suppression of the Revolt, the Queen's proclamation of 1858 declared : "We disclaim alike the right and the desire to impose our religious convictions on any of our subjects. We will not interfere with the religious beliefs and mode of worship of our subjects".

In 1882, the first Education Commission was appointed by the Government of India. The Commission observed, "The declared neutrality of the State forbids its connecting the institutions directly maintained by it with any one form of faith; and the other alternative of giving equal facilities in such institutions for the inculcation of all forms of faith involve practical difficulties which are believed to be insuperable". At the same time the Commission recommended that an attempt be made to prepare a moral textbook based on the fundamental principles of natural religion. Mr. K T. Telang, who was one of the members of the Commission, further observed : "At all events on this I am quite clear, that our institutions for secular instruction should not be embarrassed by any meddling with religious instruction, for such meddling among other mischiefs, will yield results which on the religious side will satisfy nobody and on the secular side will be distinctly retrograde".

After giving careful consideration to the Report of the Commission the Government of India in 1884 decided : "It is doubtful whether such a moral textbook as is proposed could be introduced without raising a variety of questions; and strongly as it may be urged that a purely secular education is imperfect, it does not appear probable that a textbook of morality, sufficiently vague and colourless to be accepted by Christians, Hindus and Muslims, would do much to remedy the defects or supply the shortcomings of such an education". The position in regard to religious and moral education practically remained the same till 1947.

After independence the Government of India appointed a University Education Commission in 1948 headed by Dr. S. Radhakrishnan. The report was submitted in 1949. By that time the Constituent Assembly had already discussed and declared the principles of secularism enshrined in our Constitution. After considering all the relevant facts in a scholarly manner the Commission recommended :

(i) That all educational institutions start work with a few minutes for silent meditation;

(ii) That in the first year of Degree Course lives of great religious leaders like Buddha, Confucius, Zoroaster, Christ, Socrates, Ramanuja, Muhammad, Nanak, Kabir, Gandhi, be taught;

(iii) That in the second year, selections of a universalist character from scriptures of the world be studied;

(iv) That in the third year the central problems of the philosophy of religion be considered.

The Secondary Education Commission (1952-55) with Dr. A.L. Mudaliar as its Chairman was favourably disposed towards holding of an Assembly at the commencement of a day's session with all teachers and pupils present when a general non-denominational prayer is offered. The Commission further recommends : "Moral instruction in the sense of inspiring talks by suitable persons selected by the Headmaster and dwelling on the lives of great personages of all times and of all claims will help to drive home the lessons of morality. In view of the provision of the Constitution of the secular State religious instruction cannot be given in the school except on a voluntary basis and outside the regular school hours; such instructions should be given to the children of the particular faith and with the consent of the parents and management concerned".

In 1959, the Central Advisory Board of Education appointed a special committee on Religious and Moral Instruction with Shri Sri Prakasa as Chairman. The committee submitted its report in 1960 and was all for religious and moral instruction in the educational institutions.

The Education Commission of 1964-66 headed by Prof. D.S. Kothari also felt the need for education on social, moral and spiritual values and generally agreed with the recommendations of the Radhakrishnan Commission and Sri Prakasa Committee in respect of religious and moral education. It concurred with the proposal that a few hours in the time table may be set apart for religious or moral education and at the primary stage it may be generally imparted through interesting stories drawn from the great religions of the world by general teachers preferably from different communities considered suitable for the purpose. It says : "All religions stress certain fundamental qualities of character, such as honesty and truthfulness, consideration for others, kindness to animals and compassion for the needy and the suffering in the literature of every religion, the story or parable figures prominently as a means of impressing an ethical value on the followers. The narration of such stories by the teachers at the right moment in the programme of moral education would be most effective particularly in the lower classes". The Commission further recommends : ' At a later stage accounts of the lives of great religious and spiritual leaders will find a natural place...In the last two years of the secondary school a place should be found for the study of the essential teachings of the great religions. A general study of the different religions of the world should be part of the first degree courses and a graded syllabus should be prepared for the purpose. For instance, in the first year, it can deal with the lives of great religious leaders; in the second, selections from the scriptures of the world with a universal appeal could be studied; and in the third year, the central problem of the philosophy of religions be considered". The Commission goes on suggesting that the University Departments in Comparative Religions should be specially concerned with the ways in which the moral and spiritual values can be taught wisely and effectively.

It may not be irrelevant to mention here that the International Commission on the Development of Education (1972) set up by the Unesco did not consider it necessary to recommend religious education in its Report entitled 'Learning to Be' which obviously aims at developing the "Complete Man". Instead the Commission recommends scientific humanism and social commitments as some of the goals of education.

The Preamble to the Constitution of India solemnly affirms that ours is a secular state; and Article 28(i) proclaims : "No religious instruction shall be provided in any educational institution wholly maintained out of State funds".

Thus we see that religious instruction is forbidden in the State institutions. It, however, follows from the above that religious instruction may be provided in aided or private institutions. In these institutions, too, there are certain limitations imposed by subsequent subsections.

It is true that 'Secular' does not mean irreligious or anti religious. The State must steer clear of religion, for religion is not the domain in which the affairs of the state move. The State has of course regulatory powers where secular affairs impinge on religious matters. That a State has no religion is synonymous with secularism, but it should not be equated with equal respect for all religions. When religion is in private hands, the State must show equal respect to all religions (provided it is not avowedly atheistic); but the State should not take religions in its own hands and show equal respects to them. This will be a travesty to secularism. Essentially secularism is rational and scientific and nearer to atheism, but the genius of India or Asia is basically religious and theistic and freedom of conscience is guaranteed to every citizen by the Constitution. Therefore, in deference to the spirit of democracy, secularism should curb its natural instinct against religion and be tolerant of it provided the later is in private hands. **It behoves ill of a Secular State to invoke religious spirits at State functions and show equal respect to them. It is a mockery of secularism as well as democracy if not of religion itself. Religion should best be left as a private enterprise and no attempt should be made to nationalise it**. Let not our secular democracy be converted into an equilateral theocracy. Secularism promotes scientific humanism rather than meets out evenhanded justice to all religions. Secularism coupled with freedom of conscience demands that whereas the State has no religion, the people are free to profess, practise and propagate any religion of their choice.

One of the basic objectives of education is to develop 'complete men' and therefore the development of character is of primary importance. Our educational system caters to the intellectual development alone and leaves the development of character to chance with the result that desirable qualities like personal integrity, emotional stability, and social responsibility suffer beyond measure. In an age of moral crisis and in the land of spiritual values, it is all the more necessary that our behaviour is guided on ethical considerations. One may disagree with the introduction of religious instruction in educational institutions, but all agree on the need for moral education. Religious instruction may include essentials common to all religions or inculcate the values of natural religion; but it will inevitably bring sectarian creeds and dogmas associated with the lives of great religious leaders.

Religion, no doubt, ennobles a man in some cases, but generally it may generate hostility and strife, irrationality and obscuranticism. **Mahatma Gandhi wrote : "We have left out the teachings of religions from the Wardha scheme of education because we are afraid that religions as they are taught and practised today lead to conflict rather than unity. But on the other hand, I hold that the truths that are common to all religions can and should be taught to all children—fundamental principles of ethics are common to all religions. These should certainly be taught to the children and that should be regarded as adequate religious instruction as far as the schools under the Wardha scheme are concerned".** The Mahatma was conscious of the practical difficulties of introducing religious instruction in educational institutions; and despite his profound faith in religion he kept religious instruction outside the arena of educational institutions. Further it is puerile to believe that religious instruction will make one's behaviour noble. We know well that example is better than precept. So religious education should not be allowed to enter the precincts of educational institutions

But the need for moral education cannot be denied. Moral education should be absolutely above board, and no religious instruction should be imparted through the back door. Values like personal integrity, emotional stability, social commitment, sense of social justice and democratic spirit, duties of citizens, religious understanding rather than mere tolerance, racial or ethnic harmony, humanistic approach, scientific outlook and objectivity, aesthetic sense and virtues of compassion, sacrifice, courage and the like should be assiduously cultivated and deeply ingrained among the pupils, and the courses should be very carefully prepared by competent persons. At higher levels it may be desirable to study the origin, development and philosophy of religion with special reference to the influence of geographical factors and aconomic conditions. This may include Radhakrishnan's 'idealistic view of life' and Marx's view that 'Religion is the opium of the masses'. It may be mentioned that although morality generally emanates from the religious sources, yet godless morality is also possible. Bertrand Russel advocated the "Necessity for Atheism" and men like Huxley and others pointed out the baneful effects of religious beliefs. In our own country Buddha and Nehru were highly moral without a belief in God. □

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

A.V.C. College (Autonomous), Mannampandal, Mayiladuturai

Autonomy enables our College to bestow greater attention to the students' needs, aptitudes and aspirations. It gives ample opportunities to promote academic excellence and encourage innovative experiments especially in three areas (a) Syllabus, (b) Methods of teaching, and (c) evaluation.

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To cater to the modern needs of the society this postgraduate programme of two years' duration has been introduced from the session 1987-88. The laboratory facilities were already available in view of the Computer Science course at the undergraduate level. This has been strengthened by adding more computer—Local network, etc. Thanks to the U.G.C. which has provided us with two PC/XT, one Printer and one Air conditioner.

3. *PGDCA—Postgraduate Diploma Course in Computer Applications*

Keeping in view the benefits of the graduates of this College and the Bank and Office going people this one year diploma course has been introduced with effect from the session 1988-89. It is being conducted from 5 p.m. to 8 p.m.

4. *M.Sc. Electronic Science*

This is another two year postgraduate course started from the academic years 1988-89. As an applied science, there is great demand for this course. Further, in response to the UGC's communication, based on the recommendation of the Central Advisory Board of Education, as a step of redesigning the course and opening of Electronic Science Department at the undergraduate level, the College has submitted its proposal through the Bharathidasan University.

5. *Essentials of Entrepreneurship & Salesmanship & Publicity*

These two subjects have been introduced at the allied level for B.A. Economics students. They study them for two semesters each.

6. *Public Administration & Journalism*

For B.A. History major this is introduced as an allied subject for two semesters each. Such applied subjects will help the graduates in getting suitable jobs.

7. *Economics of Farm Management & Human Resource Development*

These are the new papers introduced in M.A. Economics.

8. *Project Work*

To train the students and motivate them towards research activities, at the undergraduate level, a paper on "Basic Methodology" has been introduced (5 hrs during V semester) and project work and dissertation during VI semester. In postgraduate courses VI semester is devoted for doing project work besides two theory papers.

9. *Part IV in Undergraduate Courses*

All the extra curricular activities have been brought under part IV for undergraduate students from this academic year onwards. So NSS, NCC, Sports and Games, Fine Arts are the activities outside the academic system but they are very much an integral part. The performance of each student in any one of his chosen fields will be assessed by a team of teaching staff and marked either "fair", "satisfactory" "good", "excellent" or "outstanding" depending upon the nature of involvement and the quality of talents. This system provides ample scope for the full flowering of one's personality. This is devised by the college because education is not a passive acquisition of a mass of information but a creative process of discovery, an act of discovering oneself—one's "self". The potentialities of an individual are not exhausted by the intramural exercises given to one's intellect. The importance of this innovative insight is that the individual student gets his performance incorporated in the statement of marks given at the end of his three year studies. This is to give an official status and academic recognition to the talent brought out on the surface by the student in his attempt to attribute meaning to college education, in particular and to individual existence in general.

Proposed Programmes

It is proposed to offer a certificate course in Wildlife Biology, to inculcate environmental awareness among all the students.

A postgraduate diploma course in Computer programming is planned. This will enable all the graduates to get basic training in Computer.

Encouraged by the new scheme of UGC, a proposal has been submitted to have a 3-year degree programme in Electronic Science at the undergraduate level.

Examination Reforms

1. Remedial Courses

It is planned to hold remedial classes, outside the regular hours of teaching, for students securing less the 40% in CIA tests in each paper in part II English, major and allied in all subjects, to improve the performance. This is to help economically weaker section of the students particularly SC and ST students.

2. Question Bank

A two-day workshop was held to prepare subject-wise question banks. By now either printed or cyclostyled copies of initial question banks, subject-wise have been made available to the students. A copy of the Question Bank is sent to the external Question paper setter for reference. This will avoid Questions appearing from out of portions.

3. Evaluation

Keeping in view the interest of the below average candidates in all the semesters, supplementary examinations for the repeaters are being conducted, within a short period of 30 days, from the date of publication of regular examination results. This is to the advantage of the failed candidates, so that time is not lost for them to join with already passed candidates and to prepare themselves for the next semester.

Examination, valuation and publication of results are well programmed in advance and adhered to strictly. Results are published within 20 days from the last day of the examination. Mark statements are issued within 5 days from the date of publication of of results.

Tutorial System

Each member of the teaching staff have under their wings 15 to 20 students whose welfare, academic and general will be looked after by the Tutor-in-charge.

A Welcome Change

A healthy change introduced from 1987-88. is the new method of forming Student General Council (SGC). Class representatives who are to be members of the Student General Council, are elected by the students in the class itself. On the same day elected representatives assemble and propose names from among whom office bearers of the various Associations and college Unions are decided by Lot. This method avoids students' expenditure on elections and pangs of pre-election and post-election. □

Agricultural Scientists Recruitment Board
Krishi Anusandhan Bhavan, Pusa,
New Delhi-110 012

CORRIGENDUM

In the Advt. No. 3/88 published on **18th July, 1988**, following may be read against the essential qualification (i) in respect of the post of Joint Director (S-4) at IASRI, New Delhi appearing at S. No. 13 :

1. **Item No. 13-Joint Director (S-4), IASRI, New Delhi.**

Essential Qualifications (i) Doctorate in Agricultural Statistics/Statistics/Computer Science.

Other contents remain unchanged. The last date for receipt of applications in A.S.R.B. in respect of the above post has been extended upto **9.12.88.** Those who have already applied need not apply again.

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Technological Change and Response

"Considering the short span of forty years and the many demands on resources, the transformation of India is truly remarkable. The gains in agriculture, food, health, nutrition, transport, energy, communications and in many sectors of industry are impressive. While there may be concerns on the extent of these achievements there can be no doubt that a balanced growth has been recorded, inherent strength to meet many adverse features has been created and a sound base has been laid for further very rapid progress as a modern nation," said Dr. S. Varadarajan, Chief Consultant, Planning Commission. Dr. Varadarajan was delivering the Convocation Address at the second convocation of Thapar Institute of Engineering and Technology (Deemed University). "We now have aspirations for a much higher rate of economic growth and for major targets in food, health, literacy and for meeting essential needs of the entire population in the next twelve years. These are clearly the result of the strengths in Science, Engineering and Technology," he added. Excerpts

Convocation

India has a long tradition of fostering learning and innovation in pure science, application of scientific knowledge in many sectors including art and culture. These have resulted in advanced civilisation and organised societies. Such knowledge and culture and skills have given the country the basic strength to plan for rapid progress since our independence forty years ago. Thanks to the foresight of the founding fathers, very substantial investment has been made in advanced education and research in science, engineering and technology and in creating a well endowed bank of human resource in these areas. Similarly a variety of research institutions and industries have been created in every sector. Considering the short span of forty years and the many demands on resources, the transformation of India is truly remarkable. The gains in agriculture, food, health, nutrition, transport, energy, communications and in many sectors of industry are impressive. While there may be concerns on the extent of these achievements there can be no doubt that a balanced growth has been recorded, inherent strength to meet many adverse features has been created and a sound base has been laid for further very rapid progress as a modern nation. The last eight years have given indications of a higher rate of economic growth than in the past and have demonstrated the innate capacity to maintain such growth even in extremely difficult conditions. We now have aspirations for a much higher rate of economic growth and for major targets in food, health, literacy and for meeting essential needs of the entire population in the next twelve years. These are clearly the result of the strengths in Science, Engineering and Technology. A perusal of these strengths and potential needs in a fast changing world would be appropriate for planning for the future.

Human Resources

The annual out turn of graduates and others in different sectors of Science and Technology (S & T) in India had grown rapidly for a long period and has levelled off in recent years, as can be seen in Table 1. The competition for admission in courses in engineering, technology and medicine is very severe indeed. This is particularly acute in areas of new development such as electronics, computer science, robotics and telecommunications. It may be noted that although there is a large out turn of doctorates, these are almost entirely in various areas of pure science. There are relatively few engineering graduates continuing in India in research. Many of the doctoral graduates in Institutes of Technology or Engineering are from Science disciplines.

While at first sight, it may seem that India has a large stock of S & T personnel in the form of postgraduates, graduates and diploma holders, the total stock, as a percentage of the population is quite low in comparison with other countries (Table II). India has about 3.9 such persons per thousand of population whereas the corresponding figures for other countries are : Australia 140.2, Brazil 37.4, FRG 136.0, Indonesia 14.2, Japan 312.8, Sweden 262.4, USSR 116.1 and Yugoslavia 177.0. It is thus seen that in many developed countries a very high proportion have knowledge of science and technology. This obviously facilitates the appreciation of all avenues in S & T research and development. Even considering that only a third of India's population is literate, the current level of qualified and skilled S & T personnel in the literate population is quite low.

There is need to expand the facilities for education and training in engineering, technology and medicine quite rapidly and provide reasonable opportunities for those completing secondary education. Similarly, the facilities for training in engineering skills in Industrial Training Institutes providing diploma courses should be expanded. Such education is a national priority. Fiscal incentives may be provided for liberal contributions by commercial and industrial organisations as well as individuals towards education and training in institutions assessed and recognised by Statutory Bodies. The standards of excellence and the independence and freedom of such institutions should be preserved. The provision of supports from many sources would be particularly helpful in attaining such objectives.

The most valuable resource in education is the dedicated Teaching Faculty. There should be keen competition to attract and retain such teachers through suitable facilities and compensation. The physical infrastructure of buildings, laboratories and workshops could be more intensively used through additions to staff, at least in the short term, when financial resources pose limitations for expansions. Many families are willing to give priority for education and this should be fully utilised. For others needing assistance, merit scholarships, freeships and loans should be provided at an enlarged level.

The education system should be made flexible to allow those who are working and earning to undergo training and obtain qualifications over a longer period of time. Similarly, work practice for a period of half to one year may be made part of the course so that students gain practical experience which would be of value in appreciating the significance in academic courses. Industries and Government agencies may also be encouraged to send their engineers and technologists for retraining and advanced education for a year so that their knowledge is upgraded from time to time. These measures are urgently necessary to increase the numbers of skilled and trained personnel and to ensure modernity in the knowledge base among them.

Technological Change

The rate at which new discoveries and innovations are being made internationally has accelerated. The time interval between a new scientific advance in a laboratory and its widespread application has been shortened to seven to ten years. The transistor, integrated circuits, very large semi conductor chips, lasers, computers, fibre optics communication, engineering polymers and composites, ceramics, membranes, special metals and alloys are examples. It is estimated that integration in semiconductors chips will increase one thousand fold and their reliability ten thousand fold in only seven years. The advances in high temperature superconducting, it is predicted, will permit energy efficient electro magnet based levitating high speed trams to operate in seven years over long distances. Advances in genetic engineering and biotechnology are already leading to production of specific high value therapeutic materials as well as cell based vaccines. Genetic properties are being transferred from animals and plants to microbes and between animals. Genetic properties of microbes against pests are sough to be incorporated into plants themselves. While many communicable diseases of man and animals are already being controlled, there are prospects of relief in the case of certain forms of cancer and heart disease.

The last thirty years are marked by extraordinary strides in space, aeronautics, computers, communications, information technology and new materials. Many of these quickly cross national frontiers and find worldwide applications, extending to every remote corner and radically changing life styles. Agriculture, medicine, animal husbandry, diagnostics, transport, trade and industry are quickly affected. No country or enterprise can remain isolated for long from these advances. Nuclear power is a significant contributor to total energy requirements in France, Japan, USA and USSR, in spite of reservations expressed. Civilian aircraft travelling regularly into space and returning are expected to be in operation in ten years.

These advances, while providing extraordinary new vistas for mankind also lead to rapid obsolescence of existing systems. Human labour and physical energy are being quickly replaced. The proportion of contribution to GDP is shifting from agriculture to indusrty and services. Development is clearly knowledge-based. The acquisition, absorption and efficient application of such new knowledge in a rapid manner are essential for all forms of development and for maintaining a position in competitive acitivity.

It is surmised that knowledge base of any individual in any middle and senior level position in modern industry, business or services becomes obsolete in seven years and constant education and retraining are required to obviate such obsolescence.

Such obsolescence is already most evident in the most modern equipment in the newer industries such as electronics, computers, telecommunications, aerospace, colour photography, video films, measuring and monitoring instruments of all types and medical diagnostics. The emerging systems demand extraordinary precisions, high degree of data gathering analysis and automated programmed response, very high reliability, very low ratio of failure and deviation, full redundancy to overcome any failures, minimum human intervention, high degree of inherent safety through programmed checks and corrections.

These are evidence from the systems already deployed in industry in advanced countries. In many airports, an aircraft is designed to land in the same runway every 40 seconds and in between one other aircraft crosses the runway to take off. About 95 per cent of welding in a line in automobile manufacture is carried out by robots, which will respond to appropriate modifications for each item on the line. A factory for producing scanning electron microscopes is run by two persons. A new ammonia plant is so programmed to be operated by only three persons in each shift from the control room with no one in the plant itself.

Components and Factors in Technological Change

The examples quoted illustrate the degree of predictability in complex systems and processes, the extent of programming to manage automated response, the reliability incorporated in design and equipments which enable very large and highly complex operations to be controlled satisfactorily. Thus human creativity and ingenuity is being transferred from control of operations to systematic analysis and design as well as high degree of standardisation of equipment and raw materials. Instruments capable of constant monitoring of composition, flow rates, temperature, pressure, colour, viscosity, and other physical attributes provide valuable data inputs for recording in memory and for display on video screens in colour graphics in the case of all process industries. In engineering industry, the numbers of non-standard components have been drastically reduced and all systems are made from highly standardised components. Decentralised assembly manufacture is possible from several components. Design of components and systems itself is carried out through computers leading to computer Aided Design. Computer controlled machine tools are capable of quick translation of a new design into a product. Such precision obtained in engineering goods in turn aims at zero defect products. Automation allows total quality control instead of sampling and statistical quality control. What was obtainable in highly skilled craftsmanship is rendered possible in mass manufacture.

Engineering industry was earlier characterised by large scale small variety production. New developments in Computer Aided Manufacture allow small scale large variety production, previously possible only by craftmanship and custom order. Wide choices in shapes, colours, and accessories are available without extra cost. Dullness and uniformity in the earlier era of industrialisation and mass production is being replaced by wide variation and choice. Designs in textiles, garments, leather goods are rendered possible through computers. Stepwise changes in control systems are being replaced by continuously variable sensitive electronic controls in motors, hydrocarbon fuel engines or pumps. Variations in power supply voltage and frequency fluctuations are assimilated to produce a uniform output.

Modern communications and decentralised manufacture permit reliable flow of components in engineering industry. The inventory is reduced to a few hours supply from stocks of several months. This is also true of process industries such as chemicals, petrochemicals, polymers, synthetic fibres, primary metals, alloys, fertilisers and cement. Fermentation industries, production of antibiotics and vaccines have also high degrees of instrumentation and computer controls with on line analysis. Continuous processes are replacing batch processes. Flows and transfers are by pipelines. Even solids are converted to fluidised beds, as in coal combustion or catalytic reactions. Slurry transport of solids by pipelines is in vogue as in Kudremukh Iron Ore transport to port over hilly terrain. Standardisation in packing and bulk transport by containers lead to speed and efficiency. All these call for very great attention to evolution and adoption of international standards. India has gained by early adoption of metric system. To benefit fully, standardisation should be rapid.

A major thrust in all these developments is energy conservation. Through a series of incentives, Western Europe has achieved 17 per cent reduction in energy consumption since the energy crisis in 1973 resulting from OPEC increase in petroleum crude prices. Energy optimisation is a goal in industry, buildings and transport. Attention to design in moving machines and in lubrication had also resulted in energy and noise reduction by lower frictional losses. Light metals such as aluminium and its alloys, polymers and composites are replacing steel and heavy metals in aircraft, ships and automobiles to achieve energy efficiency and avoidance of corrosion.

Another major factor in new technologies is the need to avoid production of waste or even unusable by-products as disposal of these is a serious problem. High standards are required for safety, occupational health and environmental quality. A new trend is for the production of biodegradable materials in the case of chemicals, polymers, pesticides, dyes, paints and packaging.

A third consideration is the conservation and recycling of water, a major natural resource. Industrial processes have to be designed so as to have the least contact between water and process raw materials and intermediates. Food processing, particularly of milk, sugar, meat and fish or industrial manufacture involving natural materials or derivatives such as paper, rayon, coir, wool, molasses, alcoholic beverages, already face high costs in disposal of effluents and solid wastes. The entire range of industrial chemicals especially involving chlorine, sulphuric and nitric acids, synthetic dyes, pigments, drugs, photographic materials, non-ferrous metals e.g. mercury, copper, lead, antimony are exploring a wide variety of novel processes to avoid pollution. Even carbon dioxide, the product of combustion of all fuels is to be considered as a resource for recycling.

There is as a result much greater interest in natural products from plants and animals for use as dyes, pharmaceuticals, texturing agents, emulsifiers and detergents. Straw, saw dust and abbatoir by-products are being examined as new sources. The emergence of fructose sugar syrup to replace cane sugar is such an example. It is likely that many high value products such as cocoa, butter, essential oils and perfuming materials, spice essences, plant based pharmaceuticals and even vegetable fats of special nutritional characteristics will be made by genetic engineering of micro-organisms or in cell or organ or tissue culture in factories. Coffee and tea simulated flavours could also be produced in this way. Such developments will have far reaching consequences to the economies of many developing countries which are dependent on exports of such high value crop products.

With limitations on the resources of the land mass, increasing attention is being devoted to the ocean. Already oil and gas from off shore installations are realities. Ocean fishing is a major resource of food for men and animals. The extraordinary biological diversity of the ocean provides large source of renewable materials as well as special bio-active substances. Ocean beds are rich in minerals. Technologies for exploration, evaluation and economic exploitation would assume importance. Oceans also can be potential sources of energy from waves and temperature gradients, when suitable technologies emerge.

These areas illustrate the vast potential for new technologies. They may seem distant and improbable at present but our experience of the last forty years shows the inquisitive spirit of man can conquer many new vistas within a short span.

Response to Technological Change

The foremost requirement in such an era of rapid change is to create a culture for acceptance and indeed anticipation of such developments. Obsolescence of many systems is thus inevitable. Those who prepare themselves for absorption of new technologies and replacements of older systems would be those who would profit most by change. Some aspects of such preparation for response could be visualised.

It will be invariably the bulk of the younger generation who would be most willing to accept such changes. Modern telecommunications, television, video and films project international developments to remotest areas and these provide aspirations as well as hope of rapid improvement in lives. Education outside the formal school system thus takes place. Formal education should, therefore incorporate modifications of a larger order. Education should be aimed at cultivation of the investigative spirit. Computers enable everyone to ask questions and receive answers from the stock of knowledge. In place of routine memorising of a number of unrelated facts, education should impart the excitement in learning processes. Each child could explore areas of his choice in depth in addition to the minimum requirements of familiarity with a set of facts and methods.

As a student advances to University level, it is necessary to provide very high degree of flexibility in teaching and learning. New technological changes cannot be fitted into the conventional rigid separation of departments and disciplines. Systems of credit courses of different complexities, would permit students io pursue their interests. In many cases, a substantial knowledge of mathematics would be very necessary. Engineering and technology institutions should develop very creditable departments in mathematics and pure sciences, including modern biology. There should also be good departments in economics and management, computer sciences, materials science and technology. Information Technology, Biotechnology will have to be pursued. Environment and Ecology should receive attention as also geophysics, geochemistry and aerospace. Postgraduate training should offer many combinations to meet changing needs. Computer familiarity should be universal.

Institutions would profit from guest faculty from Industry, Government, Research Agencies, Public Utility Services sectors as Irrigation, Railways, Health Services, Power Boards, and Telecommunications. Faculty in Engineering Institutions should be provided facilities to spend periods in Industry, Banking and Public Utility Services.

Scientists and Engineers have to be employed in many departments of Central and State Governments, Municipalities and District Boards. Industry should increase the role of scientists and technologists in investigative and improvement functions as well as in Corporate Planning

An area requiring much attention is consultancy. Consultants of high quality and experience are required to outline feasibility strides, project proposals, environmental impact, design, detailed engineering, procurement, inspection, project management, construction, commissioning, modernisation, energy optimisation, safety and occupational health. It can be predicted that specialised consultancy services would have substantial expansion.

Financial Institutions providing funds for projects or improvements will undoubtedly require at many levels, engineers and scientists as consultants.

Our fiscal systems and tax laws do not yet recognise fully the rates of change in products, processes and machinery resulting from technological advance. Higher rates of depreciations, facilities to write off obsolete equipment by free choice, are required to respond to technological change. Risk capital resources have to be increased very substantially in response to technological change. There should be adequate inputs to convert a new discovery into an engineering product within a short time. The culture and atmosphere as well as personnel involved in such speedy promotion should be very different from those in conventional assessment and in proven technology for investment.

New technologies with high costs in development and initial production should be very quickly exploited worldwide in order to recover such costs. Markets are, therefore, international. Pedestrian approaches in such ventures are bound to lead to losses. Large companies with international experience are required to make profits on new technologies.

The high obsolescence rates has to lead to even throw away capital goods. A camera to be discarded after exposure of one roll of film, a digital battery operated watch to work for only three years, a car to be discarded after six years, single occasion use shaving razor or tooth brush are some examples. India is far from ready for such products. Indian industry and households continue indefinitely with obsolete and poor quality products for several decades. Periodic replacement of equipment and modernisation alone can maintain industry and services in contemporary competitive status.

A necessary response to international technological change is substantial investment by Industry and Services in its own R & D. In many developed countries, nearly 66 to 75 per cent of national expenditure in R & D is carried out by industry. Governments enter into long term development contracts with companies in order to ensure efficiency in such development and its quick translation to large scale production. Such contracts are quite different from normal purchase tenders. Mutual trust and sympathetic interaction are required between the partners.

India has experience in planned development of specific areas such as atomic energy, space, defence and petroleum hydrocarbon oil products. Such an approach has been common in other commercially or socially significant sectors. The declivication and pursuit of a few select targets as Technology Missions are reflectors of the new natural commitment for achievement. (*Tables given on next pages*).

TABLE 1

Out-Turn of Scientific and Technical Personnel from Universities in India 1847-68

DEGREE/YEAR	1947	1950	1952	1954	1956	1958	1960	1962	1964	1966	1968	1970	1972	1974	1975	1978	1979
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B.Sc.	5996	9628	11087	14427	16126	18920	22693	26930	34046	42437	59606	83610	111798	123772	95382	103574	99724
M.Sc.	905	1425	2129	2911	3255	3841	5382	7218	8882	10008	12682	16578	15951	17437	17341	17496	17439
Ph.D.	N.A.	N.A.	108	164	210	216	361	435	537	774	1100	1212	1311	1515	1484	2044	2261
BE/B.Sc.*	1270	2198	2956	3207	4337	4571	5703	8426	9456	13051	15720	17768	16505	14079	14073	17237	17236
M.E./M.Tech.	30	100	118	147	278	378	606	477	479	509	873	1067	1051	1268	1228	1928	1910
Ph.D.	N.N.	N.A.	12	19	23	20	18	20	26	39	66	98	110	163	136	134	176
M.B.B.S.	959	1557	2164	2582	2732	2839	3387	3945	4452	6558	8916	9562	9524	10578	10144	14997	15090
M.D./M S.	N.A.	88	113	110	171	281	397	525	771	1049	1254	1266	1420	2081	2204	3633	3485
B.Sc. (Agr.)	535	1000	870	910	886	994	1700	2612	4099	5259	6239	5909	5600	4505	3966	6280	6280
M.Sc (Agr.)	79	154	223	208	214	313	488	704	823	1191	1372	1670	1496	1419	1511	2384	2384
Ph.D. (Agr.)	N.A.	N.A.	5	4	11	8	11	15	19	94	120	217	267	287	289	422	480
Total	9774	16150	19785	24689	28243	32381	40746	51342	63590	80969	107948	138957	165033	177104	147758	170129	166465

*Figures for Engineering and Tech. Degree Holders include IIT's also.

Source : Data Collected by DST.

TABLE II

Scientists Engineers and Technicians for Selected Countries

Sl. No.	Name of the Country	Scientists Engineers & Technicians per thousand population	Scientists Engineers & Technicians in R & D per thousand population
1.	Argentina	79.5 (1980)	0.37 (1982)
2.	Australia	140.2 (1981)	2.41 (1981)
3.	Austria	20.4 (1981)	1.71 (1981)
4.	Brazil	37.4 (1980)	0.26 (1982)
5.	Canada	289.3 (1981)	2.1 (1982)
6.	Cuba	14.3 (1981)	1.7 (1983)
7.	Czechoslovakia	35.5 (1980)	6.80 (1983)
8.	Federal Rep.of Germany	136.0 (1980)	3.96 (1981)
9.	France	23.8 (1975)	4.44 (1979)
10.	German Dem. Republic	92.8 (1983)	11.93 (1983)
11.	Hungary	173.7 (1980)	3.80 (1983)
12.	India	3.9 (1985)	0.20 (1985)
13.	Indonesia	14.2 (1980)	0.14 (1983)
14.	Italy	47.1 (1971)	1.51 (1982)
15.	Japan	312.8 (1982)	5.24 (1984)
16.	Republic of Korea	52.3 (1981)	1.29 (1983)
17.	Nigeria	1.7 (1980)	0.05 (1977)
18.	Pakistan	1.5 (1973)	0.14 (1982)
19.	Sweden	262.4 (1979)	5.41 (1981)
20.	U.K.	N.A.	2.92 (1978)
21.	U.S.A.	14.9 (1982)	3.11 (1983)
22.	USSR	116.1 (1983)	5.28 (1983)
23.	Yugoslavia	177.0 (1981)	1.72 (1981)

Source : Statistical Year Book, 1985, UNESCO.

Note : Figures in brackets indicate the year to which the data relates.

INDIAN COUNCIL FOR CULTURAL RELATIONS

MAULANA AZAD ESSAY COMPETITION

In memory of Maulana Abul Kalam Azad, the founder President of the Indian Council for Cultural Relations, the Council will organize an annual essay competition to be called the "Maulana Azad Essay Competition". The Essay Competition will commence in 1989, coinciding with the centenary year of Maulana Azad. This has been decided by the Governing Body of the ICCR meeting under the chairmanship of the Vice-President of India, Dr. Shanker Dayal Sharma, who is also the President of ICCR.

The subject for the 1989 Essay Competition will be "Secularism and Nationalism".

The selection of the prize winning essay which carries a cash prize of Rs. 10,000/-, will be made by a Jury appointed by Vice-President of India. All citizens of SAARC countries viz. India, Bangladesh, Bhutan, Male, Nepal, Pakistan and Sri Lanka can participate provided they are less than 30 years of age on the day of submission of the entry. No association, institution or organisation shall be eligible for the prize. The essays will be written in English.

The Code of Procedure will be available through the Indian missions in SAARC countries or directly from the Programme Director (Arts), Indian Council for Cultural Relations, Azad Bhavan, Indraprastha Estate, New Delhi 110 002. The essays may be sent by **22 February 1989** at the same address.

CEDUST

French Centre for University, Scientific & Technical Documentation

The Environmental Coordination Unit of **ESCAP—United Nations Economic and Social Commission for Asia and the Pacific**—would like to select four experts to strenghten their french team of consultants who are participating in the Development of the second state of environment in the Asia Pacific Region.

FOUR EXPERTS ARE REQUIRED TO WORK ON FOUR DIFFERENT FIELDS

- **Continental Waters**
- **Forestry**
- **Urban Environment**
- **Institutional and Legislative Aspects, Policy Implementation**

FOLLOWING ARE THE GENERAL CRITERIA

- Training, if possible of a combined nature (sector-based on a scientific field—for instance, forester, geologist, specialist in natural sciences—supplemented by a general training, such as in law, economics, political science).
- International experience and thorough knowledge of problems in various countries of the Asia Pacific Region.
- If possible, experience in definition or evaluation of common policies in the field of environment.

EXPERTISE SOUGHT AND POSSIBLE SPECIFIC PROFILES

Continental Waters

Specialist in continental waters management—subject includes water resources management, quality of rivers, uses of water, inland lakes and reservoirs, fight against water pollution, management and protection of underground water-levels. Ability to relate the 'water' sector to other components of environment (forest, soil and desertification, fauna and flora...), and to human influence (depletion and pollution). Sea-water and coastal areas are dealt under another heading.

Forestry

Specialist in Forestry, its management, relationship between forest and other components of environment (water resources, soil, fauna and flora) as well as its interactions with human beings (agriculture-forest, utilisation of forest resources).

Urban Environment

Specialist in urban surroundings as regards pollution and harmful effects, and more generally the conditions of life in cities, in relation to urban development policies and those concerning urbanism and housing.

Institutional Aspects

Expert in institutional aspects (facilities and powers of making rules, management of environment and protection of nature). Knowledge of legislative and statutory aspects as well as of components of policy implementation (technological aspects, training, education and creating awareness about environment).

GENERAL INFORMATION

Honorarium	3,000 US $
Allowances (in Bangkok or during an assignment)	2,500 US $
Travelling allowance	1,500 US $
Total	7,000 US $

The proposals may be sent to the French Embassy on or before **15th December, 1988** at the following address :

Mr. Michel Brunet
Scientific Attache
French Embassy
2, Aurangzeb Road,
New Delhi-110011

University Leadership Project

The University Grants Commission (UGC) has selected the Department of Civics and Politics of the University of Bombay for implementing the University Leadership Project (ULP). Following are broadly the aims of the ULP :

(1) to enhance and update the subject acquaintance of the college teachers;
(2) to help them acquire better teaching and communication skills;
(3) to achieve a better appreciation of the parameteres of each course and the topics into which it is divided;
(4) to prepare fairly comprehensive Bibliographies on each topic and sub topic of all the courses in Political Science at the B.A. level, and also to supply selected materials to each teacher;
(5) to translate and also produce reading materials in Marathi; and
(6) to organise refresher courses, workshops and seminars to meet the varying needs of the teachers.

The project operates at two levels. There will be throughout the year programme of lectures and seminars for college teachers based in Bombay. ULP also provides a forum for college teachers to initiate discussion on metters of topical interest. Then short term courses of one to two weeks (may be during vacations) will be organised to cover exhaustively various interrelated issues of a specific theme. It is proposed to extend participation in these courses to a limited number of teachers outside Bombay. This will be tried only at a later date and in the light of experience gained during the first two or three refresher courses of workshops held later this year and early next year.

ULP will also identify some colleges with a view to supplement their Libraries with selected books and journals, which will be available to all college teachers of Bombay. The Department at Kalina will maintain a small collection of books, journals, reading materials and bibliographies specially for the use of college teachers.

ULP's first short term workshop has been planned for the last week of December, 1988 with a six day refresher course in political theory. Around 50 college teachers will be invited to participate.

The ULP is a time bound programme and is sanctioned by the U.G.C. for three years. If the Government of Maharashtra agreed to take over the posts at the end of the programme, the Department will be strengthened by having two more Readers (one in Political Theory and another in Public Adminisration) on the faculty.

Action Plan on Engineering Education

An eight-point Action Plan has been jointly prepared by the Confederation of Engineering Industry (CEI) and the Department of Education of the Union Ministry of Human Resource Development (HRD) to bring about an effective integration between the capabilities of regional engineering colleges and the technical needs of the engineering industry. Seventeen Principals of Regional Engineering Colleges have endorsed the Plan.

The Action Plan relates to industrial assignment for faculty, vocational training for students, reorientation of undergraduate projects, continuing educational facilities for working engineers, organisation of joint projects, annual lecture series, annual research review, and industrial associates programmes.

The linkage between industry and institutions would bring about better coordination and collaborative efforts to achieve desirable results in the education and training of engineering students, updating the knowledge of professional engineers and cooperation in the R & D activities. The specific objectives of the CEI-REC interaction are to facilitate exchange of personnel between the REC's and the industries for durations of the order of one month to one year for the mutual benefit of the institution and the industry sectors.

It is intended to improve the quantity as well as quality of industrial training of engineering students and to make the final year projects of undergraduates students more relevant to the needs of the industry; to strengthen the continuing education activities of the colleges, and to orient them towards the needs of the industry; to coordinate the R&D efforts of the institutions and the industries for optimum output and to encourage joint projects between the institutions and the industries for mutual benefit.

The Action Plan also seeks to strengthen the campus recruitment activities and to match the HRD efforts of the colleges and the industries to avoid wastage of precious man days and to improve the quality of training of the engineering students, to provide incentives to students to strive for better performance and to bring about a better appreciation among the students about the goals of technical education.

IIT Develops Induction Motor Controller

The Indian Institute of Technology, Madras, has developed know-how for transfer of high technology to a small industry. The device, called Smart Induction Motor Controller designed by the Electrical Engineering Department of IIT, will be useful in saving energy by reducing the voltage to the optimum value when an induction motor runs on light load. A micro-processor based digital design and a thyristor module for soft-start of the motor are incorporated in the device.

AWAAZ-88

North India Inter College Declamation Contest AWAAZ-88 concluded at Dr. Y.S. Parmar University of Horticulture and Forestry, Solan on November 4, 1988. 31 participants from the various colleges of the Punjab, Haryana and Himachal participated in the contest organised by Dr. Y.S. Parmar University of Horticulture and Forestry, Solan and the Creators Club of the University in the memory of late Dr. Y.S. Parmar.

Shri Radhe Shyam Sharma, Editor, Dainik Tribune, Chandigarh was the Chief Guest while Dr. M.R. Thakur, Vice-Chancellor, Dr. Y.S. Parmar University presided over the declamation contest function. The team from Home Science College, Hisar bagged the running team trophy for declamation contest AWAAZ-88 while Mr. Sanjay Vishist of University of Horticulture and Forestry, Solan won the first individual prize. Miss Pushpa Sharma, Home Science College, Hisar got second prize and Mr. Basu Yadav of the host University won third prize. Two consolation prizes were also given to Mr. Jatinder Bali of Govt. College, Shimla and Mr. Mirzj Birah of Polytechnic College, Ambala (Hr). Speaking on this occasion, Mr. Radhe Shyam Sharma said that declamation is an art of projecting and conveying the feelings of an individual to the audience which require presence of mind and good command over the language. He advised the participants to participate in sportsman spirit and connect mind and heart before speaking on the particular topic. Mr. Sharma gave away the prizes to the winners of declamation contest and winners of the University Wall Magazine Contest.

Dr. M.R. Thakur, Vice-Chancellor of the university, said that many people have talent but they do not have the courage to come forward. He exhorted the students to come forward to participate in all activities to polish their personality.

In the evening, North India Inter College Fancy Dress, mono acting and joke competitions were also organised in which following got the prizes :

Memory Retention Contest

1. Mrs. Vijay Bhutani University of Horticalture & Forestry, Solan,—First.
2. Mrs. Poonam Shrikot University of Horticulture & Forestry, Solan—Second.

Fancy Dress Competition

1. Mr. Rajesh Kumar, PG. College, Mandi (HP)—First.
2. Mr. Rajesh Thakur, Govt College, Shimla—Second.
3. Mr. Navjot Singh, Govt Gollege, Chandigarh—Third.

Jokes Competition

1. Mr. Sanjay Kumar Sharma, Govt. Evening College, Shimla—First.
2. Mr. Parmood Gupta, Govt. College, Kotshara, Shimla—Second.
3. Mr. Jaswinder, Govt. Polytechnic College, Ambala—Third.

Mono Acting

1. Mr. Onkar Singh, Govt. College, Chandigarh—First.
2. Mr. Avnish Atari, Univ. of Hort. & Fty, Solan—Second.
3. Mr. Tarseem Chandal, Govt. College, Kullu, HP—Third.

Prof. Parikh Honoured

Prof. Ramlal Parikh, Vice-Chancellor, Gujarat Vidyapeeth, has won an Honourable Mention of the Nadezhda K. Krupskaya Prize by the International Literacy Prize Jury of Unesco in recognition of his selfless efforts towards eradication of illiteracy in our country. Shri Parikh was sponsored by the Association for World Education, Denmark.

On behalf of Prof. Parikh the prize was recently received by Miss A. Ghose, India's Permanent representative to UNESCO at the prize giving ceremony held at the UNESCO Headquarters in Paris.

News from Agril. Varsities

Agrl. Research, Education and Planning in 8th Plan

The Planning Commission, Government of India, has set up three national committees on agricultural research, education and planning for the formulation of the Eighth Five Year Plan. These working groups are for Agricultural Research and Education for planning based on land and water use, including land reclamation and development and for Seed Production, distribution and deliry system.

The Group on Agriculture, Re-earch and Education on which Dr. Har Swarup Singh, Vice-Chancellor, HAU is one of the member Vice-Chancellor representing the agricultural Universities, is headed by Dr. M.S. Swaminathan, Ex-Director General, International Rice Research Institute (IRRI). The terms of reference of this Working Group will be to make a critical review of the achievements in the field of agricultural development with regard to target groups and specific areas and infrastructure development. This would also take care of the problems of hill areas, tribal areas, north eastern region, etc. These experts would also examine further scope of linkages between the research activities and agricultural development programmes.

The Working Group on Production, Distribution and Delivery system of seeds under the Chairmanship of Dr. M.V. Rao, Special Director General, Indian Council of Agricultural Research will work out the demand and supply system for the seeds for the 8th Five Year Plan. Other areas that will be examined by the Group will be to review critically the progress of the ongoing central and centrally sponsored programmes to their objectives and targets and give its recommendations.

The Working Group for planning based on Land and Water use including land reclamation and development will review, state-wise, the agricultural areas under irrigation, rainfed, dry-land, problem areas and to review the appropriateness of the crops grown currently in these areas. The Group would also work out crop patterns technologically suitable for each category of land and would review critically the progress achieved so far in land reclamation and development under the central, centrally sponsored and state sector programmes. The Secretary, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, will be the Chairman of this Group.

These Working Groups are expected to submit their reports by February 15, 1989.

Tractor Drawn Basin Lister

A three row basin lister easily attachable with standard nine tyne cultivator has been developed and evaluated at Zonal Research Centre, College of Agricultural Engineering of the Tamil Nadu Agricultural University. The unit can perform both ploughing and basin formation simultaneously and thereby prevents the loss of water as run off.

The basin lister consists of three trenches of width 29 cm. The penetrating portion of the trencher bottoms are provided with replaceable share point. Each trencher fitted with cam follower gets lifted up by the cam at equal intervals. For this purpose three cams are fitted on a common shaft at 120° to one another. The cam shaft along with cams rotates by getting drive from one of the ground wheels mounted on it. To reduce the ground wheel slip during operation one tension spring is fitted between the cam shaft and cultivator frame, The entire unit can be easily mounted or detached from the cultivator.

The salient features of the unit are :

(i) Continuous basins of size 240x30x15 cm can be formed in three rows in a staggered manner.
(ii) Coverage : 4 ha/day.
(iii) Cost of operation : Rs. 127/ha.
(iv) Cost of basin lister : Rs. 2000/- (attachment alone)

News from UGC

INSAT-1B Programme of UGC

Between 1st December to 10th Dec., 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

1.12.88

"Pulse Circuits—III"
"What is a Rock"
"English Worldwide"

2.12.88

"Algebraic Structure—III : Groups"
"Take off : A Life in the Day of a Fighter Pilot"
"Water Management"

3.12.88

"Water Sports : Yachting—II"
"Rare Musical Instruments : Jalatharangam"

4.12.88

No Telecast

5.12.88

"Optical Alignment—VI : The Spectrometer"

"Small Scale Industry—I"

"Sun Power for Farms"

6.12.88

"The Story of Copper"

"Transfer of Learning"

"Ayurveda Series—III : From Forest to Pharmacy-Medicinal Plants''

7.12.88

"In the Eye of an Insect"

"Art of Ajantha—III"

"Energy for the Future"

8.12.88

"Signals—I"

"Global Weather Experiment—Whole Earth View"

"Understanding Poetry—I"

9.12.88

"Algebraic Structure—IV Boolean Algebra"

"Understanding Your Library"

"Preservation of Environment"

10.12.88

"Paul Klee on Modern Art—Genesis"

"Dance of Siva"

News from Abroad

British Assistance to IGNOU

Britain has been supporting a number of collaborative research projects between British and Indian institutions in the fields of science and technology, health and medicine, education, management development, agriculture and natural resources.

In the field of education, British assistance to the Indira Gandhi National Open University (IGNOU) in the Phase I and II of the project were concerned mainly with providing consultants from Britain to assist IGNOU staff in the development of courses, and planning of Regional and student support services with an opportunity to see the working of UK Open University together with some media equipment and software. The total cost for these phases was £ 1 million. On completion of these phases, it was agreed to continue the British assistance to enable IGNOU meet agreed targets under its development programme.

In the Phase III (1989-91) the assistance will cover the following areas of development of IGNOU : Media Services, Computer Facilities (Hardware and Software development), Packaging and Printing Facilities, Academic and Applied Course Development, Regional and Study Centre Services, and Library Support. Total cost for the Phase III has been estimated at £ 3.35 million over 3 years.

The consultancy visits are also scheduled to take place during November-December to advise IGNOU on establishing the user requirements for the system related to students admissions and records and carry out the analysis and design of the system; to conduct workshops for IGNOU Regional staff ; to conduct orientation programmes for Regional Centre Co-ordinators and Regional Directors; to advise IGNOU faculty on course planning and development for courses in Technology; and to participate with the academic teams and producers in the development briefs for audio and video components for the integrated multi-media teaching packages and to advise IGNOU on script development and production planning for selected programmes.

Indira Gandhi National Open University is the first national university established in 1985 to impart education in different disciplines through distance learning by using modern communication technologies and media. The current activities of the development programme at IGNOU include (i) development of suitable outreach system based on the extension of the network of regional and study-centres; development of central resources, media and computerisation to enable the OU to implement distance learning courses for formal and non-formal education; and (iii) overall improvement of course production in terms of planning, production and the distribution of learning materials.

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A List of Research Scholars Registered for Doctoral Degrees of Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Dwivedi, Om Prakash. *Distribution theory and its application.* BHU. Dr. R.S. Pathak, Department of Mathematics, Banaras Hindu University, Varanasi.

2. Geetha, S. *Some combinatorial problems.* Kerala. Dr. M.J. Jinnah, Reader, Department of Mathematics, University of Kerala, Kariavattom.

3. John, L. *Algebraic theory of semi groups.* Kerala. Dr. A.R. Rajah, Reader, Department of Mathematics, University of Kerala, Kariavattom.

4. Tripathi, Anil Kumar. *Reliability.* BHU. Dr. V.V. Menon, Department of Applied Mathematics, Banaras Hindu University, Varanasi.

Statistics

1. Gill, Amar Nath. *Nonparametric subset selection procedures for scale parameters and hazard rates based on two sample statistics.* Panjab. Dr. G.P. Mehta, Department of Statistics, Panjab University, Chandigarh.

Physics

1. Chaube, Harinarayan. *Vibrational properties of imperfect systems with special reference to noble metal alloys.* HS Gour. Dr. K.S. Kesarvani, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

2. Dhar, Rakesh. *An approach to submicron pattern replication by an improved X-ray source.* Panjab. Dr. R.P. Bajpai, Deputy Director, CSIO, Sector 30, Chandigarh.

3. Divakarla, Padmavati. *Laser spectroscopy of molecules.* BHU. Prof. S.N. Thakur, Department of Physics, Banaras Hindu University, Varanasi.

4. Dubey, Vinay Kumar. *Studies in moisture retention, evaporation and percolation of water under various physical and soil conditions in Sagar District.* HS Gour. Prof A.P. Shrivastava, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

5. Gautam, Mahesh Kumar. *Vibrational properties of imperfect crystals.* HS. Gour. Dr. K.S. Kesarvani, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaga, Sagar.

6. Goswami, Ashutosh. *Optical methods for determining the refractive indices of liquids and lenses.* HS Gour. Dr. M. S. Thomar and Prof. R. S. Kasana.

7. Henry Raja, D. *Theory of molecular liquid and liquid crystals.* BHU. Dr. J. Ram, Department of Physics, Banaras Hindu University, Varanasi.

8. Jain, Ravindra Kumar. *Luminescence of mixed oxide phosphors.* HS Gour. Dr. J.L. Takkar, Reader, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

9. Jain, Shishir. *Luminescence of mixed alkaline earth silicates.* HS Gour. Prof. S. Sivaraman, and Dr. R.K. Pandey, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

10. Jha, Vrijendra. *Effect of crystaline field symmetries on the luminescence of single activator phosphors.* HS Gour. Dr. J.L. Takkar, Reader, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

11. Kushwaha, Anil. *Luminescence of strontium silicate phosphors.* HS Gour. Dr. R.K. Pandey, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

12. Lalit Mohan. *Solid electrolyte.* BHU. Dr. R.P. Singh, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

13. Maheshwari, Sanjay. *Luminescence of oxide phosphors.* HS. Gour. Dr. J.L. Takkar, Reader, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

14. Mishra, Suman Kumari. *Interfacial and phase transition properties of liquid crystals.* BHU. Dr. Shri Singh, Department of Physics, Banaras Hindu University, Varanasi.

15. Pathak, Akhlesh Kumar. *Electrical characteristics and electric states in polymers.* HS Gour. Dr. R. Nath, Reader, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

16. Patil, P.K. *Structural and opto-electrical properties of II-VI group compounds.* Shivaji. Dr. R.D. Lawangar-Pawar, Department of Physics, Shivaji University, Kolhapur.

17. Prasad, Babita. *Study of charge storage and transport mechanisms in acrylic acid (AA)-doped polystyrene.* HS Gour. Dr. R. Nath, Reader, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

18. Prasad, Umakant. *Study of thermodynamical properties of liquid metals in one component plasma.* BHU. Dr. S.S. Kushwaha, Department of Physics, Banaras Hindu University, Varanasi.

19. Rijhwani, Ashok Kumar. *Thermally stimulated discharge current and allied studies on polymeric systems.* HS Gour. Dr. K.K. Saraf, Reader, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

20. Sarbeya, Prabhu Dayal. *Thermo stimulated discharge studies of doped and undoped polymer films.* HS Gour. Dr. R. Nath, Reader, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

21. Satish Babu, V.P. *Studies of polymeric electrolyte.* BHU. Dr. P.N. Gupta, Department of Physics, Banaras Hindu University, Varanasi.

22. Semwal, Ashutosh. *Theoretical study of solar cells.* BHU. Dr. D.P. Singh, Department of Physics, Banaras Hindu University, Varanasi.

23. Sheikholeslami, Seyed Moussa. *Low energy properties of hyperons and charmed baryons in the skyrme and quark model.* Panjab. Dr. M.P. Khanna, Department of Physics, Panjab University, Chandigarh.

24. Shukla, Sudheer. *Phonons in semiconductors.* BHU. Dr, S.S. Kushwaha, Department of Physics, Banaras Hindu University, Varanasi.

25. Singh, Rita. *Charge storage and transport processes in nonpolar and weekly polar polymers with special reference to charge stabilization in corona charged polypropylene (PP) foils.* HS Gour. Prof. A.P. Shrivatasva, and Dr. R. Nath, Reader, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

26. Tankeshwar Kumar. *Transport and dynamical properties of classical dense fluids.* Panjab. Prof. K N. Pathak, Department of Physics, Panjab University, Chandigarh.

27. Todkar, B.M. *Electrical and optical studies of high Tc oxide superconductors.* Shivaji. Dr. S.H. Pawar, Department of Physics, Shivaji University, Kolhapur.

28. Venkata Subramaniam. Rendu Chintama. *Luminescence in silicates.* HS Gour. Prof. L. Sivaraman, and Dr. R.K. Pandey, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

29. Yadav, Narsingh. *Study of structural properties of sample and compound forming alloys in liquid state theory.* BHU. Dr. S.S. Kushwaha, Department of Physics, Banaras Hindu University, Varanasi.

Chemistry

1. Anil, C. *Abihitio molecular orbital studies of nuclear spin-spin interactions.* BHU. Prof. P. Chandra, Department of Chemistry, Banaras Hindu University, Varanasi.

2. Anjali. *Mineralogical studies of salt effected soils and chemistry of soil solutions.* Delhi. Dr. B.S. Kapoor, Reader, Department of Chemistry, University of Delhi, Delhi.

3. Dey, Mita. *Titanatis as ion exchanges for control and management of radioactive wastes.* BHU. Dr. S.P. Mishra, Department of Chemistry, Banaras Hindu University, Varanasi.

4. Dikule, P.S. *Photometric determination of some metals.* Shivaji. Smt V.A. Jadhav, Department of Chemistry, Shivaji University, Kolhapur.

5. Dwivedi, Suchitra. *Electrochemical synthesis of organic compounds.* BHU. Dr. R.A. Mishra, Department of Chemistry, Banaras Hindu University, Varanasi.

6. Hiraje, R.M. *Structural studies of transition metal complexes.* Shivaji. Dr. P.P. Hankare, Department of Chemistry, Shivaji University, Kolhapur.

7. Jagat Ram. *Studies on the chemistry of soils developed on alluvium.* Delhi. Dr. B.S. Kapoor, Reader, Department of Chemistry, University of Delhi, Delhi.

8. Joseph, Kiran, *Studies in hetrocycles.* BHU. Dr. A.K. Mukerjee, Department of Chemistry, Banaras Hindu University, Varanasi.

9. Kalra, Yogesh Kumar. *Laser photolysis and physico chemical studies of complexes.* BHU. Dr. S.D. Khatri, Department of Chemistry, Banaras Hindu University, Varanasi.

10. Kunjandy, Sam. *Studies on some lanthanide complexes of Schiff bases.* Kerala. Dr. P. Indrasenan, Reader, Department of Chemistry, University of Kerala, Trivandrum.

11. Lakhotia, Madhulika. *Abinitio molecular orbital studies of spin-2 interaction in NMR.* BHU. Prof. P. Chandra, Department of Chemistry, Banaras Hindu University, Varanasi.

12. Maheshwari, Ritu. *Metal complexes of O,S,N,P donar ligands.* Delhi. Dr. P.N. Kapoor, Reader, Department of Chemistry, University of Delhi, Delhi.

13. Mehrotra, Sangeeta. *Studies on some sulphur compounds.* BHU. Prof. P.K. Srivastava, Department of Chemistry, Banaras Hindu University, Varanasi.

14. Ohri, Harsh Kiran. *Synthesis of insect sex attractants and related compounds.* Panjab. Prof. I.R. Trehan, and Dr. G.L. Kad, Department of Chemistry, Panjab University, Chandigarh.

15. Otta, Sujata. *Structural (Organometallic) chemistry of symmetrical sulphur ligands.* BHU. Dr. V.D. Gupta, Department of Chemistry, Banaras Hindu University, Varanasi.

16. Patil, K.R. *Thermodynamic properties of aqueous solutions and their mixtures.* Shivaji. Dr. S.S. Katti, Scientist, Physical Chemistry Division, National Chemical Laboratory, Pune.

17. Ram Narayan. *Conducting polymers.* BHU. Dr. R.A. Singh, Department of Chemistry, Banaras Hindu University, Varanasi.

18. Rampure, R.S. *Studies in solution chemistry of metal complexes with thio ligands.* Shivaji. Dr. P.P. Hankare, Department of Chemistry, Shivaji University, Kolhapur.

19. Rastogi, Rashmi. *Synthetic studies in insect pheromones* Panjab. Dr. O.P. Vig, and Dr. M.L. Sharma, Department of Chemistry, Panjab University, Chandigarh.

20. Roy Chowdhury, Purnendu Kumar. *Studies on sulphur compounds.* BHU. Prof. P.K. Srivastava, Department of Chemistry, Banaras Hindu University, Varanasi.

21. Sharma, Jag Mohan. *Effect of dopants on the kinetics of hydration of dicalcium silicare phase.* Panjab. Dr. Ram Parkash, and Dr. Subhash Ahluwalia, Department of Chemistry, Panjab University, Chandigarh.

22. Sharma, Parveen Kumar. *Synthetic and magnetic resources studies of some transition metal complexes.* BHU. Dr. T.R. Rao, Department of Chemistry, Banaras Hindu University, Varanasi.

23. Sharma, Sushma. *Experiments towards the synthesis of insect sex pheromones and related compounds.* Panjab. Prof. I.R. Trehan, and Dr. G.L. Kad, Department of Chemistry Panjab University, Chandigarh.

24. Sinha, Rita. *Role of enzymes in organic synthesis.* Delhi. Dr. V.S. Parmar, Reader, Department of Chemistry, University of Delhi, Delhi and Prof. H.G. Raj, Patel Chest Institute, University of Delhi, Delhi.

25. Sundaran, A.K. *Studies on systematics and cytogenetics of Indian Drosophilas.* BHU. Dr. J.P. Gupta, Department of Zoology, Banaras Hindu University, Varanasi.

26. Tewa, Prabhat Kumar. *Studies on synthesis and microencapsulation of pyridine aldoximes.* BHU. Dr. R.V. Swamy, Scientist, Defence R&D Establishment, Gwalior and Dr. V.K. Verma, Department of Applied Chemistry, Institute of Technology, Banaras Hindu University, Varanasi.

27. Tripathi, Adarsh Kumar. *Binuclear iron complexes model as active site of methyl monooxygenase mechanism of redox reaction.* Delhi. Dr. Pavan Mathur, Department of Chemistry, University of Delhi, Delhi.

28. Verma, Ram Krishna. *Synthesis of flavonoids.* Delhi. Dr. N.R. Banerjee, Department of Chemistry, University of Delhi, Delhi.

Earth Sciences

1. Bagi, Harmeet. *Faunal communities and facies of the subathu formation of parts of Shimla and Jammu Hills.* Panjab. Prof. S.B. Bhatia, Department of Geology, Panjab University, Chandigarh.

2. Chaudhri, Akshey Rajan *Sedimentology of the Nagthat formation exposed in the Nagthatlakhwar-Tuniya region of the Kumaon Himalaya.* Panjab. Dr R.S. Chaudhri, and Dr. G.T.S. Gill, Department of Geology, Panjab University, Chandigarh.

3. Roy, Sunita. *Mineralogical study of copper tin mineralization in the Tosham area, Haryana.* Delhi. Dr. Mihir Deb, Department of Geology, University of Delhi, Delhi.

Engineering & Technology

1. Abdul Hakeem, M. *Catalysis and reaction engineering.* BHU. Dr. Ram Prasad, Department of Chemical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

2. Agarwal, Govind Kumar. *Chemical reaction engineering.* BHU. Dr. Ram Prasad, Department of Chemical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

3. Dwivedi, Awadhesh Kumar. *Separation of gaseous pollutants.* BHU Dr. A.K. Varma, Department of Chemical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

4. Eswara Prasad, Namburi. *Deformation fatigue and fracture behaviour of Al-Li alloys.* BHU. Dr. G. Malakondaiah, FFMG, DMRL, Kanchanbagh, Hyderabad and Prof. V.V. Kutumba Rao, Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

5. Jha, Manoj Kumar. *Fluid mechanics river engineering.* BHU Dr. U.K. Chowdhury, Department of Civil Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

6. Mohan, Anand Chandra. *Heat transfer and related characteristics of gas fluidized beds.* BHU. Dr. S.N. Upadhyay, Department of Chemical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

7. Mohandas, Thondapi. *The microstructure property correlation in titanium alloy weldments.* BHU. Dr. Y.R. Mahajan, Scientist D, DMRL, Kanchan Bagh, Hyderabad and Prof. V.V. Kutumba Rao, Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

8. Mohindru, V.K. *Hydrodynamics of characteristics of pulp suspensions.* BHU. Dr. S.K. Tiwari, Department of Chemical Engineering, Institute of Technology, Banaras Hindu University, Varanasi and Dr. Rajesh Pant, Director, C.P.P.R.I, Saharanpur.

9. Muralee Dharan, K. *Phase equilibria, phase transformations and alloy partitioning in Ti, Al base systems.* BHU. Dr. D. Banerjee, Scientist E, DMRL, Kanchan Bagh, Hyderabad and Prof. S. Lele, Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

10. Rai, Satish Kumar. *Microprocessor based battery electric vehicles design, analysis and stability investigations.* BHU. Dr. S.N. Singh, Department of Electrical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

11. Roy, Bijay Shanker. *Utilization of ion grade lime stone.* BHU. Dr. S.K. Tiwari, Department of Chemical Engineering, Institute of Technology, Banaras Hindu University, Varanasi and Dr. H.C. Visvesvaraya, Chairman and Director, National Council for Cement and Building Materials, New Delhi.

12. Sandeep Kumar. *Computer architecture.* BHU. Dr. S.C. Gupta, Departmant of Electrical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

13. Santosh Kumar. *Robotics (Production Engineering).* BHU. Prof. B. Kishor, Department of Mechanical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

14. Sharma, Om Prakash. *Studies and analysis of some metal forming operations.* Delhi. Dr. O.P. Grover, and Dr. A.K. Tayal, Department of Mechanical Engineering, Delhi College of Engineering, Delhi.

15. Singh, Rakesh Kumar. *Development and characterization of magnesium-lithium alloys.* BHU. Dr. P. Rama Rao, Director, DMRL, Kanchan Bagh, Hyderabad and Prof. V.V. Kutumba Rao, Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

16. Singh, Ravindra Pratap. *Pollution performance of insulators and metal oxide arresters.* BHU. Dr. J.N. Sinha, Department of Electrical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

17. Sushil Chandra. *Preparation and characterization of sintered Al-matrix composite* BHU. Dr. P.C. Upadhyaya, and Dr. Deo Nath, Department of Mechanical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

18. Varma, Rohit. *Mass transfer studies.* BHU. Dr. B.K. Agrawal, and Dr. G.C. Baral, Department of Chemical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

BIOLOGICAL SCIENCES

Anthropology

1. Bose, Kaushik Sankar. *A survey of group specific and non specific lectins in Indian flora and fauna and their use as tools for the characterization of human red cells, serum and saliva.* Panjab. Prof. V. Bhalla, Department of Anthropology, Panjab University, Chandigarh.

Biology

1. Dhuria, Shivshankar. *Ecological studies of some mined out areas of Madhya Pradesh.* HS Gour. Dr. Ram Prasad and Prof. G.P. Mishra, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

Biochemistry

1. Manihar, Sunita R. *Studies on fresh water fish lectins.* Delhi. Dr. (Mrs) Hasi R. Das, and Prof. B.K. Bachhawat, Department of Biochemistry, University of Delhi, Delhi.

2. Shamsi, Mohammad Baba. *Studies on protein metabolism under influence of certain pollutants, salinity stress and metabolism in rice.* BHU. Dr. H.P. Pandey and Dr. J.P.N. Chaurasia, Department of Biochemistry, Banaras Hindu University, Varanasi.

3. Shanker, Sandeep *Control of polyamine metabolism in mycobacteria.* Delhi. Dr. Anil K. Tyagi, Department of Biochemistry, University of Delhi, Delhi.

Microbiology

1. Bansal, Om Bilas. *Genomic studies of nuclear polyhedrosis virus (NPL) infecting the insect Spondoptera bitura (Order : Lepidoptera).* Delhi. Dr. U.N. Singh, Department of Biophysics, University of Delhi, Delhi.

2. Mangala Gowri, P. *Microbial genetics.* Delhi. Dr. (Mrs) Sheela Srivastava, Reader, Department of Genetics, University of Delhi, Delhi.

3. Manjula Reddy, K. *Molecular genetic studies of Nocardia mediterranea with reference to rifamycin production.* Panjab. Dr. Sunil Dass, Scientist 'C', Institute of Microbial Technology, 177-G Industrial Area, Chandigarh.

Botany

1. Abbas Ali, N. Syed. *Tissue culture of some economic plants.* Delhi. Dr. C.B. Sehgel, Department of Botany, University of Delhi, Delhi.

2. Agarwal, Anuradha. *Plant growth and development.* Delhi. Prof. H.Y. Mohan Ram, Department of Botany, University of Delhi, Delhi.

3. Chandel, Satyapriya. *Morphological and chemotaxonomical studies on some tribes of euphorbiaceae.* HS Gour. Dr. T.R. Sahu, Reader, and Prof. Y.K. Dixit, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

4. Chawla, Bindu. *Plant biotechnology : Tissue culture and genetic engineering of rice.* Delhi. Dr. S C. Maheshwari, Department of Botany, University of Delhi, Delhi and Dr. A.K. Tyagi.

5. Chokse, Pramila. *Taxonomic study of phytoparasitic fungi from phanerogamic flora of Karta forest, Sagar.* HS Gour. Dr. A.N. Rai, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

6. Dube, Pramod Kumar. *Ecophysiology of some important tropical forest tree seeds.* HS Gour. Dr. P.K. Khare, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya Sagar.

7. Goswami, Ravi Prakash. *Studies on environmental impact of the Isarwara cardboard factory and reutilization of its waste products.* HS Gour. Dr. A.S. Mishra, Reader, and Prof. K.M. Vyas, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

8. Gupta, Manoj Kumar. *Study of the foliicolous fungi parasitizing forest flora of Sagar, M.P.* HS Gour. Dr. A.N. Rai, and Prof K.M. Vyas, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

9. Jain, Chitra. *Studies on the mitotic and cytological effects of some insecticides.* HS Gour. Dr. N.K. Soni, Reader, Department of Botany, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

10. Jain, Meena. *Studies on interrelationships amongst weeds and crops.* HS Gour. Dr. S.P. Bajpai, Reader, and Dr. A.K. Kandya, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

11. Jawahar Lal. *Studies of some flora of Shilajit-bearing rocks.* BHU. Prof. S. Ghosal, Department of Pharmaceutics, Institute of Technology, Banaras Hindu University, Varanasi.

12. Khare, Vandana. *Studies of soft rot diseases of fruits and their control measures.* HS Gour. Dr. Pradeep Mehta, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya Sagar.

13. Kulkarni, Harsh Kumar Dharmaraj. *Investigations into the possibilities of tree improvement through vegetable propagation* HS Gour. Dr. Ramprasad and Prof. G.P.

ishra, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

14. Malik, Mukesh Kumar. *Photobiological mechanisms in plant growth.* Delhi. Prof. S.C. Maheshwari, Department of Botany, University of Delhi, Delhi.

15. Manu, Jyoti. *Role of some non-hormonal growth regulators in pollen biology.* Delhi. Dr. S.B. Babbar, Department of Botany, University of Delhi, Delhi.

16. Mishra, Manish. *Reproductive biology and propagation of some forest plants.* HS Gour. Dr. Ram Prasad, and Prof. G.P. Mishra, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

17. Pasricha, Lakshmi. *Molecular biology of flowering.* Delhi. Dr. S.C. Maheshwari, Department of Botany, University of Delhi, Delhi and Dr. A.K. Tyagi.

18. Shamsi, Raiyaz Qaiser. *Histochemistry and tissue culture in some economic plants.* Delhi. Dr. C.B. Sehgal, Reader, Department of Botany, University of Delhi, Delhi.

19. Sheel. *Histochemistry and ultrastructural (Embryology) studies in anthers and pistils of certain angiosperms* Delhi. Prof. N.N. Bhandari, Department of Botany, University of Delhi, Delhi.

20. Singh, Surendra Pal. *Studies on the seed biology of recalcitrant seeds of tropical plants with special reference to Madhya Pradesh.* HS Gour. Dr. Ram Prasad, and Prof. G.P. Mishra, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

21. Tiwari, Kamlesh Kumar. *Study of the leaf spotting fungi of Gopalpura forest.* HS Gour. Dr. A.N. Rai, and Dr. N.K. Soni, Reader, Department of Botany, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

Zoology

1. Gulati, Manju. *Chromosome studies on some Indian curculionidae and their significance in taxonomy (Coleoptera : Insecta).* Panjab. Prof. H R. Pajni, and Dr. (Mrs) T.K Gill, Reader, Departmant of Zoology, Panjab University, Chandigarh.

2. Jaspal Singh. *Age and growth studies of some common commercial freshwater fishes using hard Paris.* Panjab. Dr. M.S. Johal, Department of Zoology, Panjab University, Chandigarh.

3. Mali, K.A. *Studies of antifertility effects of Abrus precatorius in female albino rat.* Shivaji. Dr (Smt) Aruna A. Kanase, Department of Zoology, Shivaji University, Kolhapur.

Medical Sciences

1. Chakraborty, Swapan Kumar. *Concept of svitra (Vitiligo) in ayurveda and nonpharmacological approach in its treatment.* BHU. Prof. D. Ojha, Department of Kayachikitsa, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

2. Jaiswal, Anil. *Neuroimmunopharmacology, CNS and the immune response.* BHU. Prof. S.K. Bhattacharya, Department of Pharmacology, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

3. Mukhopadhyay, Dehnath. *Studies on the effect of heavy metals on thyroid function.* BHU. Dr. J.P.N. Chansuriya and Prof. G.P. Dubey, Department of Basic Principles Institute of Medical Sciences, Banaras Hindu University, Varanasi.

4. Paliwal, Jyoti Kumar. *Pharmacokinetics of centchroman : A new non-steroidal post-coital antifertility agent.* BHU. Dr. P.K. Grover, Central Drug Research Institute, Lucknow and Dr. S.B. Jayaswal, Department of Pharmaceutics, Institute of Technology, Banaras Hindu University, Varanasi.

5. Ram Singh. *Personality in disease susceptibility.* BHU. Prof. G.P. Dubey, Department of Basic Principles, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

6. Sharma, Kalpana. *Effect of indigenous drugs on labour.* BHU. Prof. (Km) P.V. Tewari, Department of Prasuti Tantra, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

7. Singh, Dip Narain. *Study of Hirschsprung's disease in children.* BHU. Prof. G.D. Singhal, Department of Surgery, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

8. Suresh Kumar. *Regulation of plasminogen activator activity in cultured human lung fibroblasts.* Panjab. Dr. Bishnu P. De, Scientist C, Institute of Microbial Technology, 1389, Sector 33-C, Chandigarh.

9. Tripathi, Vachaspati. *Phytochemical (Biological) analysis of certain indigenous cardiotonic drugs.* BHU. Dr. S.B. Acharya, Department of Pharmacology, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Chowdhary, Subhash. *Symmetry and some measures in information theory.* Delhi.

2. Das, Mili. *Fuzzy relations and applications to the graph theory.* Calcutta.

3. Singhal, Pramod Kumar. *Quasi-ideals in semigroup rings.* Delhi.

4. Singh, Parmanand. *Some contributions to non-standard analysis and topological dynamics.* Magadh. Dr. M.N. Singh, Department of Mathematics, Magadh University, Bodh Gaya.

Astronomy

1. Rajsekhar Rao, N. *Optical studies of X-ray binaries.* Osmania.

2. Sarma, C.V. Subba Rama. *A study of the Rs CVn type eclipsing binary, SV camelopardalis.* Osmania.

Physics

1. Abdul Rasheed, T.M. *Laser induced thermal lens and near infrared absorption studies of CH overtones in some organic compounds.* CUST. Dr. V.P.N. Nampoori, Reader, Department of Physics, Cochin University of Science and Technology, Cochin.

2. Ajaya Kumari, K. *Analysis of certain spectral estimation methods.* Osmania.

3. Ambika, G. *Studies on the universal parameters and on set of chaos in dissipative systems.* CUST. Dr. K. Babu Joseph, Prof and Head, Department of Physics, Cochin University of Science and Technology, Cochin.

4. Khokhar, M.S.K. *Studies on the effect of doping on the mechanoluminescence of irradiated and non-irradiated NaCl LiF crystals.* Ravishankar. Dr. B.P. Chandra, Reader, Department of Physics, Rani Durgawati University, Jabalpur.

5. Pratap, K.J. *Preparation and characterization of low ressitive p-CdTe, n-SnO_2 thin films and their application in solar cells.* Osmania.

6. Ramachandtan, T. *Development of a nitrogen laser pumped dye laser with a single stage amplifier and studies on energy transfer dye laser systems.* CUST. Dr. K. Sathianandan Prof. (Retd). Department of Physics, Cochin University of Science and Technology, Cochin.

7. Sarma, M.V. Subrahmanya. *Optical and transport properties of* CaF_2-SrF_2 system. Osmania.

8. Sarna, Indu. *A microscopic and X-ray diffration study of polytypism in cleaved* CdI_2 *crystals and structure determination of new polytypes.* Delhi.

9. Singh, Durga Prasad. *Studies on characteristics of helical and conical Archimedean spiral arrays.* BHU. Prof. K.K. Dey, Department of Physics, Banaras Hindu University, Varanasi.

10. Singh, Khaidem Manihar. *Accurate intramolecular force fields from vibrational and electronic spectroscopy of benzoitrile, ethynylbenzene and styrene.* BHU. Prof. S.N. Thakur, Department of Physics, Banaras Hindu University, Varanasi.

11. Singh, Megh. *Diffusion of particles in magnetosphere.* Rohilkhand. Dr. S.K. Khare, Govt. Raza PG College, Rampur.

12. Sivakumar, K. *Structural studies on compounds of biological interest.* Anna.

13. Thejappa, G. *The radio bursts from the outer corona.* Bangalore. Prof. Ch. V. Sastry, Indian Institute of Astrophysics, Bangalore, and Dr. M.N. Anandaram, Department of Physics, Bangalore University, Bangalore.

Chemistry

1. Agarwal, Sunil Kumar. *Study of oxidative mechanism of some substituted anilic acids by ceric sulphate.* Rohilkhand. Dr. V.S. Goel, S.M. College, Chandausi.

2. Kar, Himanshu Shekhar. *Study on Ph and O sorption behaviour of chemically pretreated alumina and silica gel in relation to chromatography.* Ravishankar. Dr. G.L. Mundhara, Reader, Department of Chemistry, Ravishankar University, Raipur.

3. Krishnamoorthy, P.V. *Studies on the individual and coadsorption of organic molecules at the mercury/solution interface.* Madurai.

4. Laxmi Bai, T. *Oxidation of organic compounds by Fe (VI) : A kinetic study.* Osmania.

5. Mahindroo, Virinderkumar Karamchand. *Synthesis of biologically active molecules.* Baroda.

6. Majumdar, Chitra. *Effect of polyene antibiotic on some biochemical properties of Aspergillus niger.* Calcutta.

7. Nanda, Pammi. *Incidence of lactose intolerance in cases of diarrhoea.* Rohilkhand. Dr. Vimal Mehra, Bareilly College, Bareilly.

8. Nanda, Priyanka. *Studies on haematological and immunological aspect of malaria with reference to blood groups.* Rohilkhand. Dr. Vimal Mehra, Bareilly College, Bareilly.

9. Pandey, Hari Om. *Study of the compounds formed by the oxidation of some monofunctional organic compounds by some new oxidants.* Ranchi.

10. Patel, Dhanjibhai Narsinghbhai. *Studies of liquid crystals and liq uid crystalline polymers.* Bardoa.

11. Patel, Mukesh Parshottambhai. *Synthesis and characterization of new chelating amphoteric ion exchangers.* Baroda.

12. Rengamani, S. *Electrochemical studies at metal-solution interface-amines as corrosion inhibitors for mild stee in acidic solutions.* Madurai.

13. Rizvi, Sabiha Yawar. *Studies on coordination compounds of transition metal ions with Schiff bases.* Rohilkhand. Dr. M.S. Bhatnagar, Bareilly College, Bareilly.

14. Sharma, Smiti. *Separation of metal ions and metal DMSO complexes by ion exchange chromatography and electrophoresis.* Rohilkhand. Dr. S. Sharma, Hindu College, Moradabad.

15. Sharma, Usha. *Determination of xanthates and related compounds.* HP.

16. Sikarwar, Shishupal Singh. *Analytical studies on thiosemicarbazones (TSC)*, Rohilkhand. Dr. R.B. Singh, Govt. Raza PG College, Rampur.

17. Sinha, Sucharita. *Studies on polysaccharides.* Calcutta.

Earth Sciences

1. Alok Kishore. *Late middle and upper cambrian biostratigraphy and faunal provinces of Himalaya.* Jammu. Dr. S.K. Shah, Department of Geology, University of Jammu, Jammu.

2. Babu, Manohar. *Geology of the tin and associated mineralization in Katekalyan Area, Baster District, Madhya Pradesh.* Nagpur. Dr. G.G. Deshpande, Department of Geology, Nagpur University, Nagpur.

3. Dhal, Dilip Kumar. *Studies in the applied climatology of Orissa with special reference to water resources development.* Andhra.

4. Kalita, Seva Ram. *Geology of the lower Gondwana formation, elephant flat area, Kameng District, Arunachal Pradesh.* Gauhati. Dr. M. Ahmed, Reader, Department of Geology, Gauhati University, Gauhati.

5. Krishna Reddy, B.M. *Geological investigations of Karya magnesite deposits and chemical petrology of ultramafites of Mysore District.* ISM. Prof. V.D. Choubey, Indian School of Mines, Dhanbad and Dr. P.K. Gangopadhyay.

6. Parcha, Suraj Kumar. *Study of upper middle cambrian-ordovician faunal assemblages and populations of North Western Kashmir.* Jammu. Dr. S.K. Shah, Department of Geology, University of Jammu, Jammu.

7. Roy, Uma Shankar. *Qualitative and quantitative assessment of tertiary coals of Jotana oil field and genesis of oil with respect to coal by modern well logging techniques.* ISM. Prof, B.B. Bhattacharya, Indian School of Mines, Dhanbad and P.K. Chandra, Oil and Natural Gass Commission, Bombay.

8. Singh, Vijay Shanker. *Hydraulics of large diameter wells and aquifer parameter estimation.* BHU. Prof. C.L. Singh, Department of Geophysics, Banaras Hindu University, Varanasi.

Engineering & Technology

1. Dey, Gautam Kumar. *Rapid solidification of ziroconium alloys.* BHU. Prof P. Ramachandra Rao, School of Materials Science and Technology, Institute of Technology, Banaras Hindu University, Varanasi.

2. Haldar, Durga Das. *Role of conditioning in oil agglomeration of middlings.* ISM. Prof. T.C. Rao, Indian School of Mines, Dhanbad and Dr. S.K. Majumdar, Central Fuel Research Institute, Dhanbad.

3. Jotshi, Chand Kiran. *Kinetics and thermophysical studies of salt hydrates for energy storage applications* Panjab

4. Khan, Rahamatullah. *Some theoretical studies on electrical and optical properties of heterostructure Impatt Diodes.* BHU. Prof. B.B. Paul, Department of Electronics Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

5. Panneerselvam, M.A. *Performance of paper-polypropylene and all-polypropylene capacitors impregnated with transformer oil and caster oil mixtures.* Anna.

M.B.A. PROGRAMME SUKHADIA UNIVERSITY, UDAIPUR

ADMISSION NOTICE 1989-90

Applications are invited for admission to M.B.A. (full time two-year regular programme) for the session 1989-90. Prospectus and application forms can be obtained from the office of the Director, M.B.A. Programme, College of Commerce & Management Studies, Sukhadia University, Udaipur on payment of Rs. 25/- in cash at counter or if required by registered book post by remitting Rs. 32/- by a crossed bank draft only in favour of the Director, M.B.A. Programme, Udaipur. Forms will be available from **November 15, 1988.**

Eligibility : Candidates possessing Bachelor's Degree in any discipline from a recognised University with 50% marks (45% for SC/ST) in the aggregate are eligible. Those appearing at the final year Bachelor's Degree examination are allowed to appear at the entrance test provisionally.

Last date for submission of applications	**—January 16, 1989**
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Test Centres—Udaipur, Jaipur, Delhi, Indore, Hyderabad, Bangalore, Pune and Varanasi (if sufficient number of candidates apply for the centre).

A.K. Singh
DIRECTOR

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ANDHRA UNIVERSITY VISAKHAPATNAM-530 003

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Applications are invited from the candidates residing in India for Entrance Examination for admission into I Year **B.A./B.Com. degree course through the School of Correspondence Courses.**

Candidates who pass the Entrance Examination are eligible for admission into 1st year B.A./B.Com degree in the School of Correspondence Courses and they will be admitted as Supplementary Batch candidates during the academic year 1988-89. The 1st year University examinations for these candidates will be held in September/October, 1989 and 2nd and 3rd year Examinations will be held with a gap of one year each thereafter.

No minimum qualification is required to appear for the Entrance Examination except that the candidates should have completed 21 years of age dy 1-1-1989. The candidates have to complete the entire three years course of study through the School of Correspondence Courses only.

Applications will be issued from 16th November, 1988. Duly filled in applications should reach this office on or before **21-12-88**. Applications received after the due date of 21-12-88 will be accepted on payment of penal fee at the following rates :

Upto 23-12-88 (for first two days)	...	Rs. 2/-
Upto 31-12-88 (between third and tenth day)	...	Rs. 10/-

Applications received after 31-12-88 will not be accepted even with penal fee.

Under modified scheme of Entrance Examination there will be four papers of one hour duration each and the examination will be conducted in two sessions **on Sunday, the 29th January, 1989** from 9.00 a.m. to 11.00 a.m. and from 2 00 p.m. to 4.00 p.m. Examination will be conducted in one centre in each district in Andhra Pradesh besides the existing centres in Andhra and Nagarjuna University jurisdiction.

Intending candidates may write to the undersigned by DESIGNATION for application, form syllabus and model question papers by sending Rs. 10/- by Money Order or Demand Draft drawn in favour of the Director, School of Correspondence Courses, Andhra University, Waltair alongwith one self-addressed envelope of 9"×6" size (without affixing postal stamps). The candidates may also remit cash at the Cash Counter in the School towards application form. Postal Orders, Cheques will not be accepted.

The prescribed application forms, syllabus and model question papers are also available at our following Study Centres on payment of Rs. 10/- through Demand Draft drawn in favour of the Director, School of Correspondence Courses, Andhra University, Waltair : 1. Government College, Srikakulam; 2. M.R. College, Vizianagaram; 3. Mrs A.V.N. College, Visakhapatnam; 4. Government College, Rajahmundry; 5. P.R. Government College, Kakinada; 6. Sir C.R. Reddy College, Eluru; 7. S.R.R. and C.V.R. College, Vijayawada and A.C. College, Guntur.

The School has no agents and takes no responsibility for the prospectus issued and promises made for admission by any other institution.

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Prof. V. Abraham
DIRECTOR

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Applications are invited for the following posts in Central Scientific Instruments Organisation, Sector 30, Chandigarh :

1. Associate Instructor (English)—(One Post)—(Rs. 2200-75-2800-EB-100-4000 (The post is classified as 'Administrative').

Qualifications : (Post No. 1/1) : M.A. in English with 5 years experience in language teaching.

Job Requirement : To teach English to the students of Indo-Swiss Training Centre so as to develop their comprehensive ability in English communication, skill in writing and spoken English.

2. Senior Scientific Assistant—(One Post)—(Rs. 1640-60-2600-EB - 75 - 2900)

(The post falls in Group III of New Scheme).

Qualifications : (Post No. 2/1) B.E. in Electronics Engineering OR Computer Engineering. Fxperience in Microprocessor based on instruments/software development in high level languages will be preferred.

3. Technical Assistant Gr. VIII—(One Post)—(Rs. 1400-40-1800-EB-50-2300). (The post is classified as Technical under Group III of New Scheme).

Qualifications : (Post No. 3/1) : Three years' Diploma in Mechanical Engineering/Instrument Technology.

(PART II)

(Posts Reserved for Scheduled Caste/Tribe Candidates)

(Persons belonging to these communities should apply with attested copies of community certificate from appropriate authority).

4. Scientist 'B'—(Two Posts)—Rs. 2200-75-2800-EB-100-4000)

Qualifications : (Post No. 4/1) (Reserved for ST candidate) : BE (1st Class) in Electronics OR Computer Engineering. Experience in Micro Processor based Instruments/Software Development in high level language will be preferred.

Qualifications : (Post No. 4/2) (Reserved for SC candidate) : Qualifications requirements are same as for post No 4/1 above.

Note : 1. Post No. 4/2 is to be filled up for one year only OR for the period of deputation of incumbent against whom this is to be filled, whichever is earlier.

2. Candidates not belonging to SC/ST communities may also apply for the reserved posts of Scientist B (Post No. 4/1 & 4/2) which are reserved for ST/SC (being second advertisement) so that in case suitable candidates belonging to the reserved communities are not available, the posts will be treated as unreserved and filled up accordingly.

5. Senior Translator (Hindi)—(One Post)—(Rs. 1640-60-2600-EB-75-2900)

(The Post is classified as 'Administrative')

Qualifications : (Post No. 5/1) (Reserved for SC candidate) : (i) Master's Degree of a recognised University in Hindi/English, with English/Hindi as main subject at degree level OR Master's degree of a recognised University in any subject with Hindi and English as main subject at degree level OR Master's degree of a recognised University in any subject with Hindi/English medium and English/Hindi as main subject at degree level OR Master's degree in Hindi/English or in any other subject with Hindi/English medium with English/Hindi as a main subject or as medium of examination at degree level & (ii) Recognised Diploma/Certificate Course in translation from Hindi to English and vice versa or two years' experience of translation work from Hindi to English and vice versa in Central/State Government Office, including Government of India undertaking.

Job Requirement : The incumbent will be required to translate official correspondence / scientific literature from English to Hindi and vice versa. He/She may also be required to do original office work in Hindi.

Age Limit : 30 years as on 1-12-1988. The selection will be made on the basis of examination and interview to this post.

6. Technical Assistant Gr. VIII—(Two Posts)—(Rs. 1400-40-1800-EB-50-2300). (The posts are classified as Technical under Group III of New Scheme).

Qualifications : (Post No. 6/1) (Reserved for ST candidate) : Three years' Diploma in Mechanical Engineering/Instruments Technology. Post No. 6/2 (Reserved for SC candidate) : Diploma in Instrument Technology or Mechanical Engineering of three years duration.

Job Requirement for Post No. 6/2 : To impart practical training to the students of Indo-Swiss Training Centre on mechines.

A Lower Standard of suitability consistent with efficiency will be applicable to Scheduled Caste and Scheduled Tribe candidates in respect of posts reserved for them. Number of posts in each category likely to vary at the time of Selection.

General Conditions Applicable to all above Posts

Candidates appointed with engineering qualifications, if so required, be liable to serve in any Defence service or post concerned with the Defence of India for a period of not less than four years including the period spent on training, if any, provided that such person (i) shall not be required to serve as aforesaid after the expiry of ten years from the date of appointment and (ii) shall not ordinarily be required to serve as aforesaid after attaining the age of forty years.

All posts are temporary and carry usual allowances admissible under the Central Government Rules as applicable to CSIR. The total monthly emoluments at the minimum of the pay scales will be as under :

Minimum of the Scale of Pay	Total emoluments at Chandigarh
Rs. 2200/-	Rs. 2946/-
Rs. 1640/-	Rs. 2257/-
Rs. 1400/-	Rs. 1862/-

Designations of Posts are subject to revision on the basis of functional requirements.

Services of incumbents are transferable anywhere in India. Higher initial start can be given to deserving candidates. For regular post of Scientist B in CSIO, appointments will be on contract basis for a period of six years unless the selected candidates happened to be permanent CSIR/Govt. employees. Post No. 4/2 is of short term duration and appointment will be for a period of one year only OR the period of deputation of incumbent against whom the post is being filled whichever is earlier. Fare limited to single second class rail fare by the shortest route from the place of residence/actual departure whichever is nearest will be defrayed to and fro Chandigarh on completion of the return journey after interview subject to production of cash receipt/bus tickets.

Application forms free of cost are obtainable before 12-12-88 from the Administrative Officer, Central Scientific Instruments Organisation, Sector 30, Chandigarh-160020 by sending self-addressed and stamped Rs. 1.80 envelope of 23 x 10 cms. **Separate application is required to be submitted for each post clearly indicating Post No. as in the advertisement.**

Applications with attested copies of certificates of qualification, experience, date of birth/community certificate in respect of Scheduled Caste/Tribe candidates from appropriate authority should accompany alongwith non-refundable application fee of Rs. 8/- (no IPO is required from Scheduled Caste/Tribe & Ex-Servicemen candidates) in the form of crossed Indian Postal Order drawn in favour of the Director, Central Scientific Instruments Organisation, Chandigarh. Applications received without Postal Order will be rejected.

Last date for receipt of completed application is **9-1-1989.**

Persons working in Govt. Departments / Undertakings / Autonomous Organisations should apply through proper channel. Incomplete applications in any form or received after the last date for whatever reasons will be rejected.

Note : (1) Canvassing in any form and/ OR bringing in any influence political or otherwise will be treated as a disqualification for the post.

(2) Interim enquiries will not be attended to.

(3) Any incorrect or incomplete information recorded in any application form will render the applicant ineligible for consideration even after appointment it will render the candidate to strict disciplinary action and dismissal from service.

(4) Since it is not possible to call all the eligible candidates for interview the applications will be short-listed for the purpose and the decision of the Institute will be final.

———

इन्दिरा गांधी राष्ट्रीय मुक्त विश्वविद्यालय
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
YMCA Cultural Centre,
1 Jai Singh Road
New Delhi-110 001

CORRIGENDUM TO
Advt. No. 5/Admn./88-89

The 'Scale of Pay' and 'qualifications' listed under the post at Sl. No. 1— "REGISTRARS", be read as given below :

Scale of Pay : Rs. 4500-150-5700-200-7300

Qualifications

1. A postgraduate degree with at least 55% marks or its equivalent grade.
2. At least 15 years of experience as Lecturer/Reader of which 8 years should be in Readers grade with experience in Educational Administration.

   OR

   Comparable experience in research establishments and other institutions of higher education.

   OR

   15 years of administrative experience of which 8 years as Deputy Regisrrar or an equivalent post.

Note

The appointment of Registrars shall be for a tenure of five years which can be renewed for similar terms.

Other details listed under 'Specialisations/Desirable' for the post of "REGISTRARS" remain unchanged.

REGISTRAR

विद्यार्थियों / अध्यापकों के लिये शुभ संदेश

पठन-पाठन प्रक्रिया में सुविधा के लिये भारतीय विश्वविद्यालय संघ कई वर्षों से स्नातक व स्नात
स्तर के विभिन्न विषयों पर अंग्रेजी भाषा में प्रश्न-बैंक प्रकाशित करता रहा है। इन प्रकाशनों में उप
सामग्री एवं सूचना शिक्षकों एवं विद्यार्थियों के लिये अत्यन्त उपयोगी सिद्ध हुई है।

हिन्दी भाषी प्रांतों के शिक्षकों एवं विद्यार्थियों की लम्बे समय से चली आती मांग को पूरा करने के
प्रश्न-बैंकों की इस श्रृंखला को हिन्दी भाषा में प्रकाशित करने का हमारा यह पहला प्रयास निश्चय
लाभप्रद सिद्ध होगा। इसी आशा के साथ प्रस्तुत है :

जन्तु विज्ञान (Zoology)	मूल्य रु० 100.00
रसायन विज्ञान (Chemistry)	,, रु० 160.00
वनस्पति विज्ञान (Botany)	(प्रकाशन में)

अधिक जानकारी के लिये लिखें अथवा सम्पर्क करें —

अवर सचिव (प्रकाशन)
भारतीय विश्वविद्यालय संघ
ए.आई.यू. हाऊस, १६ कोटला मार्ग
नई दिल्ली-११०००२

ALIGARH MUSLIM UNIVERSITY
ALIGARH
ADMISSION NOTICE NO. XV
SESSION 1988-89

Applications are invited from eligible candidates for admission to M.D./M.S./ and Diploma Courses in the following subjects in the Faculty of Medicine :

M.D. Courses

1. Anaesthesiology
2. Bio-Chemistry
3. Forensic Medicine
4. General Medicine
5. Obstetrics & Gynaecology
6. Microbiology
7. Paediatrics
8. Pathology
9. Pharmacology
10. Physiology
11. Community Medicine
12. Radiology

M.S. Courses

1. Anatomy
2. E.N.T.
3. General Surgery
4. Ophthalmology
5. Orthopaedic Surgery

P.G. Diplomas

1. Anaesthesiology (DA)
2. Child Health (DCH)
3. Obstetrics & Gynaecology (DGO)
4. Laryngology & Otology (DLO)
5. Medical Radio-Diagnosis (DMRD/DMRT)
6. Ophthalmology (DO)
7. Orthopaedic Surgery (D. Orth.)

Minimum Eligibility Requirements

1. M.B.B.S. examination from this University or an Examination recognised by this Univessity as its equivalent.

2. Should have completed satisfactorily one year of compulsory rotating internship after passing the final MBBS Examination and must have full registration with State Medical Council.

3. Should have completed one year as House Physician/House Surgeon, of which at least 6 months should have been spent in the Department of speciality or should have alternate equivalent experience prescribed by the M.C.I., by 27.1.1989. However, candidates who will be completing one year house job by 12.5.1989 may also apply for the test, Those who complete their house job on 27.1.1989 will be offered admission to January 1989 Batch and those who complete the house job by 12.5.1989 will be admitted to July, 1989 Batch.

4. The choice of subject will be on the basis of the merit, and admission will be made only after completion of house job of one year duration on the dates specified above.

5. A common admission test will be conducted for all candidates seeking admission to M.D./M.S./Diploma Courses in various Departments.

6. The test is open to candidates from all over the Country. As per directive of the Supreme Court of India, 25% of the seats will be filled by All India Competitive admission test to be conducted by the All India Institute of Medical Sciences, New Delhi. The remaining 75% of the seats will be filled as per University rules.

7. The merit of the candidates will be decided on the basis of the written test and Viva-Voce. Only those candidates who secure not less than 35% of the marks in the Admission Test (Written & Viva-Voce) will be eligible for admission.

8. The test will be conducted on 2.1.1989 and the viva-voce will be held on 3rd and 4th Jan., 1989 as per schedul to be notified later.

Candidates seeking admission to these courses will not be sent separate intimation letters to appear at the test. Those who fulfil the minimum eligibility requirements for appearing at the admission test should report at the admission office two days before the date of commencement of the admission test to collect the entrance cards so as to enable them to appear at the admission test.

In case a candidate is found ineligible on scrutiny of his/her application, he/she will not be issued the Entrance Test Card.

It may specifically be noted that no change in subjects shall be allowed, under any circumstance, after admission has been completed in a particular subject.

Application form and Guide to Admission can be obtained by post from the Deputy Controller (Admissions), Post Box 52, Aligarh Muslim University. Aligarh, 202001 by sending a crossed Indian Postal Order for Rs. 5/- payable to the Finance Officer, A.M.U., Aligarh alongwith a self-addressed envelope of 9" x 6" size affixing stamps worth Rs. 6.40 for one single application form. In case the application form is required to be sent by Registered Post, stamps worth Rs. 9.90 should be affixed on self-addressed envelope. If more than one application form is required, separate stamped envelopes should be sent with the requisition.

The application form duly filled in along with the registration fee of Rs. 50/- (non-refundable) through the Crossed Indian Postal Order, payable to the Finance Officer, A.M.U. Aligarh should be sent by registered post, so as to reach the Deputy Controller (Admissions), Post Box 52 Aligarh Muslim University, Aligarh 202001 by 5.00 P.M. on **17.12.1988.** Late or incomplete applications will not be accepted, and no further correspondence will be entertained regarding such applications.

CONTROLLER OF EXAMS. &
ADMISSIONS

INDIAN COUNCIL OF MEDICAL RESEARCH

Applications are invited upto **20th December, 1988** for the following posts at the Council's Institutes/Centres.

1. At the Malaria Research Centre, Delhi

(a) Deputy Director—one post

(Scale of Pay : Rs. 4500-150-5700)

Qualifications & Experience : Essential : (i) MBBS with 12 years research/teaching experience OR M.D. with 10 years research/teaching experience in relation to malaria and malaria control measures (ii) Original work as evidenced by publications.

Desirable : Training in malariology/medical entomology. Practical field experience in organising applied field research programmes.

Job Requirements : Scientist would be responsible for (i) Organizing nationwide entomologieal and genetic research through its field stations and collaboration with NMEP, (ii) To participate in teaching and training programmes of the Centre, (iii) Screening of research projects and to guide the research fellows of the Centre, (iv) Share responsibility of administrative and financial matters of the Centre, (v) Interact with the scientific departments of the Govt. of India, etc.

(b) Assistant Director (Medical)—one post

(Scale of Pay : Rs. 3700-125-4700-150 5000)

Qualifications & Experience : Essential : (i) MBBS with 12 years research/teaching experience in epidemiology OR M.D. with 10 years research/teaching experience in epidemiology original research, experience in epidemiology of communicable diseases preferably malaria. (ii) Original work as evidenced by publications.

Job Requirements : Scientist would be responsible for organising epidemiological investigations in malaria endemic areas of the country, supervise epidemiological research at the field stations, participate in malariogenic stratification, mathematical modelling early warning / forecasting systems, teaching and training programme of the centre and any other duty assigned by the Director.

2. At the Enterovirus Research Centre, Bombay

Deputy Director—one post

(Scale of Pay : Rs. 4500-150-5700)

Qualifications & Experience : Essential : MBBS with 12 years research/teaching experience in Virology (10 years for those with M D. in Microbiology or Pathology).

Desirable : (i) Ability to guide postgraduate students. (ii) Administrative ability.

3. At the Cytology Research Centre, New Delhi

Assistant Director (Clinic)—one post

(Scale of Pay : Rs. 3700-125-4700-150-5000)

Qualifications & Experience : Essential : (i) MBBS from a recognised University. Evidence of leadership with 12 years OR M.D. with 10 years research/teaching in the field of gynaecology. (ii) Original work as evidenced by published papers.

Job Requirements : (i) To co-ordinate the clinical aspects of major multicentric studies such as cervical precancer & cancer and breast cancer undertaken by the Centre in collaboration with other institutes & hospitals. (ii) To offer appropriate management to cervical precancer and cancer cases. (iii) Participation in planning & administration and other research programmes. (iv) To look after the administrative work of the division of clinical research.

Age : Below 50 years for the posts of Deputy Director and below 45 years for the posts of Assistant Director. SC/ST candidates allowed relaxation in accordance with Govt. of India rules.

Allowances as per Central Government rules are admissible on the above pay scales.

Benefits of pension admissible. Private practice is not allowed. However, NPA as per rules of the Council is admissible to medical graduates only. Candidates called for interview for the posts of Deputy Director and Assistant Director will be paid 1st class rail fare by shortest route, on production of documents.

Applications from employees working in Central/State Govt. Deptts./Public Sector Undertakings and Govt. funded research agencies must be forwarded through proper channel.

Application forms can be obtained from the office of the Director General, Indian Council of Medical Research, Ansari Nagar, Post Box No. 4508, New Delhi-110 029. Forms duly completed should be sent to the Director General, Indian Council of Medical Research, Ansari Nagar, Post Box No. 4508, New Delhi-110 029 with a crossed IPO for Rs. 8/- payable to the DG, ICMR, New Delhi. SC/ST candidates are exempted from this payment.

Incomplete and late application or without postal order will not be entertained. The name of the post and of the Institute/Centre must be indicated in the application form.

Separate application form should be submitted for each post with crossed IPO for Rs. 8/- and for each Institute.

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BHAVNAGAR UNIVERSITY

Notification No. 9/88

Applications are invited for the following posts :

Reader : Gujarati, English, Statistics (Science Faculty)

Lecturer : Marine Science with specialisation in Geology or Geochemistry or Geophysics or Physical Oceanography :

Qualifications required as prescribed by UGC. Applications in seven copies accompanied by crossed postal order of Rs. 25/- drawn in favour of Registrar, Bhavnagar University, Bhavnagar are invited in the following format so as to reach on or before **30th November, 1988.** Preference will be given to SC/ST/Baxi Panch candidates as per rules.

APPLICATION FORMAT

1. Full name of the applicant;
2. Residential address;
3. Address for correspondence;
4. Date of Birth
5. Whether a member of Scheduled Caste/Tribe.
6. Educational Qualifications;
7. Experience about service
8. Information about Post-graduate teaching.

Dr. R.S. Mehta
REGISTRAR

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University News

MONDAY, NOVEMBER 28, 1988 Rs. 2.50

DR D C KULSHRESTHA
PRESIDENT
DR H G SINGH
DEAN—AGRI
SAMPSON DAVID
CUL-OFFICER—AIU

From R to L : Dr. K.V.S. Kaushal, Minister for Agriculture, Uttar Pradesh, Shri S.S. Ahmad, Vice-Chancellor, Shri Sampson David, Cultural Officer, AIU and Dr. H.G. Singh at the inaugural function of the North Zone Youth Festival held at the C.S. Azad University of Agriculture & Technology, Kanpur

PUNJAB AGRICULTURAL UNIVERSITY

ADMISSION NOTICE

Applications are invited for admission to Ph.D. programme in the following subjects for the academic session, 1988-89 commencing from 8th February, 1989.

College of Agriculture

Agronomy; Animal Science (Animal Breeding, Animal Nutrition, Animal Production Physiology, Livestock Production & Management); Extension Education; Entomology; Food Technology; Pomology; Vegetable Crops; Plant Breeding; Plant Pathology; Soil Sciences.

College of Basic Sciences & Humanities

Botany; Chemistry; Biochemistry; Economics; Sociology; Genetics; Statistics; Microbiology; Zoology; Business Administration.

College of Veterinary Science

Vety. Anatomy & Histology; Vety. Bacteriology and Virology; Vety. Surgery & Radiology; Vety. Medicine; Vety. Pharmacology : Vety. Parasitology; Vety. Pathology; Vety. Physiology.

College of Agricultural Engineering

Farm Power & Machinery; Soil and Water Engineering; Processing & Agricultural Structures; Electrical Engineering.

School of Energy Studies in Agriculture

Energy Science & Technology (in the field of Engineering, Microbiology, Biochemistry and Agricultural Economics).

College of Home Science

Foods & Nutrition

Minimum Qualifications at a Glance

(i) **For Inservice Candidates :** A grade point average of 3.20 (4.00 basis) or 50% marks at Master's level in the respective field and a grade point average of 2.00 (4.00 basis) or 40% marks at graduation level.

In service candidates shall be an employee of PAU/Punjab Government/Union Territory of Chandigarh having atleast 5 years service with three years service after getting Master's degree on the last date of receipt of application.

Inservice candidates securing a minimum of 50 marks or above according to the table in sub rule (iii) of Rule 17(b) of Admission Rules will be eligible for admission.

(ii) **For other than Inservice Candidates :** A grade point average of 3.40 (4.00 basis) or 60% marks at Master's level in the respective field and a grade point average of 2.00 (4.00 basis) or 50% marks at graduation level.

Note : (i) Please see Prospectus for the academic year, 1988-89 for detailed qualifications, reservation and fellowships, etc.

(ii) The candidates seeking admission to Ph.D. programme in **Agricultural Engineering** will have to appear for a qualifying examination except the candidates for Energy Science & Technology and Electrical Engineering in the major field of specialization Engineering Sciences and Mathematics at 9.30 A.M. in the College of Agricultural Engineering, PAU, Ludhiana in addition to the interview on the scheduled Date at 3.00 P.M. They should come prepared for qualifying examination and report to the Dean, College of Agricultural Engineering at 9.15 A.M. on 20.1.1989.

Prospectus and Application Forms *:* Available from the office of the Registrar, Punjab Agricultural University, Ludhiana on payment of Rs. 5/- per copy by cash at counter or by sending crossed Indian Postal Order(s) for Rs. 7/- payable to the Comptroller, Punjab Agricultural University at PAU Office, Ludhiana.

Last Date for Receipt of Applications : 20.12.1988.

Note : (iii) Only one application will be entertained for Ph.D. Programme on the basis of first preference of subject mentioned in the application form in the order of interview fixed below. Incomplete and without testimonials applications are liable to be rejected.

Interviews: Interviews will be held on the following dates, time and place mentioned against the subject :—

Subject	Date	Time	Place of Interview
Agronomy, Extension Education, Entomology, Plant Pathology, Food Technology	16.1.89	9.00 AM	Pal Auditorium Cemplex, PAU Ludhiana
Plant Breeding, Pomology, Vegetable Crops, Animal Sciences, Soils	17.1.89	9.00 AM	-do-
Botany, Chemistry, Biochemistry Business Administration	18.1.89	9.00 AM	-do-
Genetics, Zoology, Microbiology, Economics, Sociology, Statistics	19.1.89	9.00 AM	-do-
College of Home Science	20.1.89	9.00 AM	-do-
College of Vety. Science	20.1.89	10.00 AM	-do-
College of Agril. Engineering and Energy Science & Technology	20.1.89	3.00 PM	-do-

NOTE : No separate interview letter will be issued. No T.A./D.A. is admissible.

S.S Gill
REGISTRAR

UNIVERSITY NEWS

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor
SUTINDER SINGH

UNIT
C. F. T. R. I., MYSORE

A Question of Honesty

The Three Language Formula

Amrik Singh*

The three language formula was originally evolved by the Central Advisory Board of Education (CABE) in 1956. It was endorsed by the Chief Ministers in 1961. During this interval of half a decade, it became clear that while Hindi was being taught in some of the southern States, hardly any, South Indian language was being taught in any of the northern States. Consequently, when the proposal came up for endorsement before the Chief Ministers, it was specifically mentioned that in respect of the northern States the three languages should include a South Indian language.

Described briefly, the formula puts the accent on (a) the regional language, (b) Hindi or English, and (c) another modern Indian language. In practice this arrangement has been sabotaged for almost a quarter century. The requirement of a modern Indian language (preferably from the South) was done away with in the North and, instead, Sanskrit was taught. In the South the formula was implemented much more honestly except in Tamil Nadu.

That State is not keen on Hindi. Formally speaking, Hindi was taught from the sixth to the eighth standard. But since there was no outside assessment, how seriously it was taught or otherwise could never be determined. The situation was described in the following words in the Programme of Action (POA) which was prepared a few months after the National Policy on Education (NPE) was adopted :

> The implementation of the three language formula has been less than satisfactory. The main deficiencies include the following : (a) all the languages are not being taught compulsorily at the secondary stage; (b) a classical language has been substituted for a modern Indian language in some States; (c) no provision exists for the teaching of South Indian languages for which the formula indicated a preference, in the Hindi speaking States; (d) duration for compulsory study of three languages varies; and (e) competency levels to be achieved by students in respect of each language have not been precisely specified.

In accordance with these recommendations, the CABE recently went into the question in further detail. Following its decision, the Central Board of Secondary Education (CBSE) has informed all institutions connected with it that, with effect from 1989, the arrangements would be described above. The other Boards in the country are expected to take similar follow-up action and, within the next few months, we should hear more about it.

In the case of Delhi, there is an additional factor, according to the Delhi Education Act, 1973, the three languages (Sanskrit in the case of most schools in Delhi) were to be taught up to the secondary level. In practice however, the third language (Sanskrit) was discontinued after the eighth class whereas it was required to be taught till the tenth class. There is currently a controversy between the Department of Education

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**Former Secretary, Association of Indian Universities, 2/26, Sarva Priya Vihar, New Delhi-110016.*

of Delhi Administration and the CBSE as to who is responsible for not continuing the third language after the eighth class. Regardless of this controversy, the fact remains that the provisions of the Act were not being followed and the latest decision seeks precisely to enforce the provisions of the Act.

Even though the next academic session is several months away, controversy regarding the new provision has already erupted. Those who oppose this decision do it on the ground that this would hurt Sanskrit. One is not too sure that this would happen, particularly in view of the successful manner in which Maharashtra has combined the teaching of Marathi and Sanskrit in the ratio of 80:20.

Most Indian languages are either rooted in Sanskrit or have a close and integral relationship with it. Guided by this consideration, Maharashtra embarked upon this interesting experiment almost a decade ago. By all accounts, it has been a resounding success. Every student who learns Marathi also learns Sanskrit. Only the proportion of Sanskrit in the total workload is one fifth of what it would be had Sanskrit been taken as an independent subject. But in that case the number of those opting for Sanskrit would have been much smaller.

Should this formula be applied to Delhi, instead of the 30,000 or so who now take Sanskrit in the tenth class, almost all students at that level, (approximately 1,50,000 in number), would be doing both Hindi and Sanskrit. Would this be better or worse than the existing situation ? This is a question that needs to be raised and answered.

Put another way, it is a question of making the right choices. While the study of Sanskrit has been without question neglected in modern India, what needs to be asked is : Should the study of Sanskrit be promoted at the cost of the modern Indian languages? To pose the issue as if it were a choice between Sanskrit or its neglect would not be fair. The right question to ask is : Will this arrangement promote the cause of Hindi and other modern languages ?

As already stated, the whole issue has been handled dishonestly. In the North the issue was evaded in a devious way. In Tamil Nadu, students pretended to learn Hindi whereas in actual fact they were not doing so. While the letter of the law was complied with in Tamil Nadu, even that was defied in the North. According to what the Chief Ministers had decided the third language should have been one of the South Indian languages and not a classical language.

Considering the strains on the Indian polity, and the relative weakness, (not absence) of a feeling of a national solidarity, it is of the highest importance that the existing reservations and prejudices are overcome. But there is a price to be paid for it. Those in the Hindi speaking belt who prefer not to learn any one of the South Indian languages do not help the cause of Hindi or of national solidarity. If those in the South have to be encouraged to take to Hindi those in the North have to make a gesture of accommodation. This is precisely what is sought to be achieved in terms of the latest decision.

Who is opposed to these decisions ? One may be loosely described as the lobby of Sanskrit teachers. Once Sanskrit becomes only 20 per cent of the syllabus, some of them may lose their jobs. But this can be taken care of easily by taking an administrative decision that no one would be retrenched. On the positive side, if the number of those learning Sanskrit as a part of the regional language courses increases several fold as it should (it will increase five times in the case of Delhi) the fear of retrenchment may turn out to be unfounded.

The second source of opposition is the revivalist lobby. It is difficult to persuade them to see a different point of view, but the attempt need not be ruled out as something not worth undertaking. Once Sanskrit becomes an integral part of the study of each modern Indian language, as it can and may, (the Maharashtra experiment is a significant pointer), the situation can take a turn for the better rather than for the worse.

As against these negative factors, it is important to refer to the role of those who can and ought to work for the enforcement of the new policy. One is to mobilise those, both within education and outside it, who believe that the modern Indian languages have not had as good a deal as they ought to have had. It is time they spoke out loudly rather than remained content with what is proposed to be done.

Secondly, those who believe that the country needs much more of emotional solidarity than exists today should assert themselves. Their assertion should take the form of underlining the fact that according to the new arrangements resistance to the spread of Hindi is likely to decline in terms of the new arrangement and that would not be an inconsiderable gain. In fact the decision needs to be supported from this point of view alone.

It is the failure of Hindi to become acceptable all

(*Continued on page 4*)

Horizontal and Vertical Polylingualism

A Psychological Point of View

Maharaj Singh*

In our country, we have a wide spectrum of languages and therefore, we do have an opportunity to learn more than one language either at the same time (horizontally) or one after the other (vertically). In practice according to the three language formula proclaimed by our first Prime Minister, every child in school (public or private) throughout the country is supposed to learn three languages including his own mother tongue.

In such an enriched environment, we often wonder whether knowing more than one language is advantageous to our cognitive and mental development. Also, whether there exists any critical (optimum) age at which we should start learning the subsequent languages. Several studies have acknowledged the advantage of learning more than one language to our cognitive development (Vaid, 1982 for review). For example, the exposure to more than one language appears to accelerated awareness of the arbitrary relationship between sound and meaning (BenZeev, 1977a, b; Cummins, 1978; IncoWorral, 1972). This, in turn might lead a person to follow more analytic approach to language structure and have superior performance on sentence construction and on word-meaning task.

One important aspect of learning the second and subsequent languages pertains to the medium of instruction in which they are taught (or learned). Such a medium of instruction can either be the first or the same language which is being learned or taught. In case one chooses to learn the second language through its own medium of instruction the translation or correspondence between the two languages which automatically develops in our brain enriches our cognition. However, in terms of the psychological theories of learning all that we learn through our experience, is the relationship between entities by association (Bindra, 1976). Thus, by associating the elements of the two or more languages and by making out various similarities and dissimilarities between the languages, we not only enrich our knowledge of the languages, but also enhance our cognitive and analytic abilities. Learning the second and subsequent languages through their own medium of instruction, however, seems to require more flexible brain and may be better suited for young children and in case of the horizontally learning the second (or the third...) language simultaneously along with the mother tongue.

Another method by which the second and the subsequent languages can be learned and taught is known as 'translation method'. This seems to be an easy approach and without going into the details of the language being learned or taught we often concentrate on the similarities and dissimilarities between the first and the second language. It is not always, however, possible to understand the particular language just by its correspondence to the other. Each and every language has developed in a unique way and has a profound impact of the time period, place and necessities of the people in its development. A particular language has, in short, a deep rooted cultural impact on its unique development. It is, therefore, very difficult to identify the correspondence between the languages. However, as we know, various languages do have several similarities. There are some languages which have been so intermixed that people whenever speak/write in one language often use the words of the other. In such cases it is very difficult to identify the extent to which the people are exposed to a language (or the languages) other than their first language.

The limited use of the elements of one or more languages in the primary language is called 'code-mixing (CM)'. CM as defined by Kachru (1978) refers to "the use of one language for consistent transfer of linguistic units from one language into the other, and by such language mixture developing a restricted or not so restricted code of linguistic interaction." Such a code-mixing can easily be seen in Indian subcontinent where not only the Indian languages have a substantial code-mixing, but, English has also succeeded in occupying a highly prestigious position, specially in the urban setting (Kachru, 1969; Sridhar, 1977).

The age at which the secondary language be in-

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troduced is a very crucial factor. Researches have shown that children have more flexibility and therefore they tend to learn the Secondary language at much faster rate (though they also tend to forget sooner if the learned language is discontinued from being taught or used). Although there seems to be no clear evidence to suggest the most appropriate age at which the secondary language or languages be introduced, it must be as early as possible or at the most be up to the age of ten.

From a neurological point of view, the primary language in most right handed persons is processed in the left hemisphere. However, the secondary languages do not necessarily follow the similar pattern of laterlization. Also, it has been suggested that right hemisphere plays a greater role in processing the secondary language as compared to the processing of the primary language. It may be that by learning more than one language we are able to utilize our cognitive capacity to a greater extent.

To conclude, it is suggested that we should encourage learning of the secondary languages and, if possible, through their own medium of instruction. Efforts should be made to develop the ability to keep languages separate so that mixture of two or more languages is avoided. If the prople can keep the individual languages separate, their knowledge of each one of the lauguages would be much more rich. The age of the secondary language introduction must be as early as possible. □

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A Question of Honesty

(*Continued from page 2*)

over the country which, to some extent, is responsible for the pre-eminent position of English today. English may continue to be studied for the wealth of knowledge that it contains. That is understandable. But that part of its popularity which derives from the non-acceptance of Hindi needs to be diluted. In plain words, while continuing to study English, let English not become a crutch on which we learn in order to discover a sense of unity among ourselves.

Unity achieved through the medium of English would mean the unity of the elite alone. What we need is the unity of the common people and not only of the elite. For that purpose Hindi ought to be accepted all over the country and, furthermore, such capabilities as are required for a growing and vibrant language in the modern world too should be developed. It is a tall order and several people would regard it as far from realistic or feasible. Those who think like this (and their number is not small) then, have an obligation to propose a better alternative. If anyone believes that the existing situation can continue indefinitely, it is time to re-examine our assumptions regarding the shape of our future polity and the nature and character of development for the country that is visualised.

For obvious reasons, the study of languages has been an emotive issue in our country. It is not going to be so easy to de-emotionalise it. When the three language formula was adopted, it was the outcome of mature and considered thinking. The difficulties inherent in the situation had been taken into account and it was then that a consensus was worked out.

The consensus, however, has not been acted upon all these decades. To now oppose the implementation of that consensus decision would amount to an attempt to reopen the issue. Once it is reopened, it can lead to all kinds of unpredictable consequences. Common sense as well as sanity require that we do not move in that slippery direction. □

SCIENCE AND SOCIETY

"However, the physical aspect of science is over-emphasised. Most discussions are centred round what science has or can do to improve our material comfort, and seldom ponder over how science influences one's view point, one's thinking," said Prof. K.L. Chopra, Director, Indian Institute of Technology, Kharagpur, while delivering Shri Rameshwar Tantia Memorial Lecture at Shri Jamnalal Bajaj Institute of Studies in Non-Violence, Peace Research Centre, Gujarat Vidyapith. "In the long run it is not the scientific theories or inventions which are of substantial value to a society but it is the scientific stand point inculcated in the members of a particular society. Science Influences every aspect of society, it alters or modifies social institutions, ideas, values, literature and other tools of human interaction," he added. Excerpts

Preamble

The last four decades have witnessed a major change in the image of science : what used to be an intense love affair of a dedicated, honest, curious, adventurous, non-conformist scientist with natural phenomena, has now evolved as a saleable, commercial business of vast and multifarious dimensions. The fact that science can service society and can be commercially exploited in the form of technological products, has transformed world societies significantly. Developing or developed, Eastern or Western, Capitalistic or Socialistic, Democratic or Dictatorial, the impact of Science and its applications, is discernible in all societies. Thus—science has come to be an integral part of society; the two must coexist. This lecture explores some aspects of their dynamic interaction. To begin with some basic concepts need to be established.

Basic Concepts

The word 'Science' comes from the Latin root 'Scire' meaning 'to know' or simply 'knowledge'. Eugene Rabinowitch defined science as "...a system of data and relationships covering vast areas of information derived from observation, analysis, and manipulation of natural phenomenon". Science, thus, deals with the expansion of our basic knowledge and the uncovering of rules of nature.

The word 'Technology', on the other hand, comes from the Greek root 'techne' meaning 'art' and has been often translated as the 'science of industrial art''. Technology is a complex process by which specialised knowledge is consciously applied to achieve a specific purpose. It consists of creating and changing things for well defined objectives. It is interesting to note the views of sociologists about technology. According to Lenski, technology refers to the informatives, techniques, and tools by means of which men utilize the material resources of their environment to satisfy their various needs and desires. In effect, it is a kind of cultural extension of the organic equipment with which we are endwed : our hands, our eyes, our ears, our legs and the rest. Like language, it is an essential element in every socio-cultural system, without which most human needs could not be satisfied.

Science is a particular activity and the result of that activity—science brings forth engineering via technology and in turn engineering and technology support and sustain it, both its educational and research aspects. Science connotes power while technology and engineering confer a direction to that power and thereby, influence society. Over the years, the reality of science has indeed become technology and it is only through the broad perspective of technology that the social consequences of science can be meaningfully discussed.

In its purest form, science plays the role of a visionary, and has humanity as its sole objectives. Science and human life are linked through a rather intimate though complicated pattern of interdependence and interaction : new techniques create new opportunities in a society; but making use of these opportunities, entails reorganisation of social beliefs and behaviour. In its concept, the intellectual enterprise of science is hardly any different from that of social philosophy, and the two areas of enquiry run parallel. Today, it is almost impossible to evaluate either science or society separately : what is society without science and what would be the relevance of science if society were not there to measure it. The preoccupation of this lecture then is to evaluate on the one hand the social impact of science and technology, and on the other the motivation and direction provided by society to the power of science.

Social Consequences of Science

Science is the single powerful force which can build or destroy society. Science affects the members of a society both physically and mentally : It affects their life style : and it affects their opinions.

By assuring better health and increased normal life expectancy, science promises man a substantial extension of his individual power and senses. Recent developments in pharmacology and neurophysiology offer possibilities of better quality of health and even a change in personality through controlled behaviour.

Science promotes inquisitiveness, it demands verification and is thus, a force in itself for the development of mind and brain of the members of a society. Is it possible to quantify the contribution of science in combating ignorance, superstition and obscurantism in a society like India ?

However, the physical aspect of science is over-emphasised. Most discussions are centred round what science has or can do to improve our material comfort, and seldom ponder over how science influences one's view point, one's thinking. In the long run it is not the scientific theories or inventions which are of substantial value to a society but it is the scientific stand point inculcated in the members of a particular society. Science influences every aspect of society, it alters or modifies social institutions, ideas, values, literature and other tools of human interaction.

In the present context science emerges as the foremost unifying factor in different social communities. Today the unity is not of history, culture or even religion but of knowledge, of the scientific stand point. Another major unifying factor is the ultimate dependence of different communities on each other. Scientific/technological research and its applications require vast amounts of resources and survival has come to depend an intelligent sharing of these resources. Science is monitoring the world towards an eventual global culture.

Science unites through its very conceptions, its stand point. The scientific stand point unites because it attempts to be truthful and hence impartial. In fact, science takes impartiality to its climax—if a good judge does not differentiate between Mr. X and Mr. Y, a good scientist does not differentiate between Mr. X and an earthworm. It is in this light that J.B.S. Haldane calls the scientific stand point as "God's-Eye-View" :

"In so far as it places all phenomena on the same emotional level the scientific point of view may be called the God's-eye-view."

Homonization and Harmonization of Science and Society

Of course, science-society relationship is not always positive. Science connotes "change" which is the only unchanging reality of any society. Now, any "change" is invariably accompanied by side effects, some of them may be inconvenient. It would appear that individuals are out of harmony with the technical order they have created themselves : the ultra-rapid changes caused by technological advancement have led to ethical and emotional dilemmas. Many social psychologists insist that a fundamental disparity exists between modern technology dominated societies and individual aspirations for security and stability.

In the present social context, science faces serious accusations. Indeed, at the very moment when science can boast of improving human condition, why is that man feels alienated, insecure and overwhelmed by the presence of his mechanical slaves, the discrepancy between technological change and the moral and ethical values leads to confusion and, more than ever before the fundamentals of society and sense of human activities are being challenged.

Science is considered to be the root cause of many ills in the society. Some of them engaging the attention of the World Community are :

- * Accumulation of means of warfare, in particular the menace of nuclear destruction.
- * Causing ecological and environmental imbalance through pollution and detrimental technologies.
- * Depletion of natural resources through imprudent plundering of nature.
- * Increased dependence on technology leading to subtle and continual erosion of human selfhood, subjectivity and traditional qualitative values.
- * Surrender of scientists and technologists to political system and their obligation to meet its needs coupled with an increasing tendency on the part of the scientists, technologists and technocrats to seek power.

But, obviously, these negative aspects of which science is often accused are not actually inherent in science or technology, but in the objectives for which science and technology are used. Besides, science alone can cure the ills of science. Most scientists and

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AUTONOMY IN ACTION

The article on AVC College, Mannampandal, Mayiladuturai in our series on 'Autonomy in Action' and published in 21st November, 1988 issue of University News was authored by the Principal of the College Shri R. Balasubramanian. The omission of the byline in the article is deeply regretted.

echnologists, as also politicians nd economists, favour the idea hat more scientific research is equired to counter the negative side effects of scientific discoveries. Scientists alone can find the solution to the problems created by them.

Once exposed, societies all over the world—including developing or underdeveloped—are fascinated and hooked onto science—small or big, and technology—low or high. Clearly, therefore, irreversible changes are being brought about by the interaction of science with society. What is called for is homonization and harmonization of science and society. It is no more a question of what science has done for society, or society has done for science. It is a question of how the twins harmonize to benefit the mankind.

Science Versus Society Versus Socio-Economic System

The progress or the advancement of any society is in fact a measure of the presence of science in that particular society. What is the difference between U.S.A. and India in terms of progress or development. Is it not merely the application of technology prevalent in day to day life in these two countries ? For that matter what is the difference between Bombay and Saharanpur or a remote village in Bihar ? The advancement of a country, of a particular society, depends on the modernity of the technology used by it.

Technological advances have changed the basic fabric of society. Today, the status of the scientist (as builders or destroyers) is being recognised the world over. Both in the U.S.A. and the U.S.S.R., the capitalist and the labour class have slipped from the position of primary importance. The priviledged class of today comprises members of science academies, builders and technocrats from the industrial units. The same goes for India where the technocrats are steadily gaining ground, at least in planning, if not execution.

However, the impact of science is not uniform on all societies as is evident from the fact that the science-society interaction manifests itself differently in different countries. The kinds of changes that take place in a particular society depend on the conditions, conventions, traditions and values of that particular society. Different societies have evolved differently under the ever-increasing impact of science and technology.

The synergetic interaction between science, technology and society depends on cultural, social, socio-economic, socio-political background of the particular society. This point is best illustrated by taking up the examples of three culturally different socio-economic systems of Japan, U.S.A. and U.S.S.R. Having suffered a humiliating defeat in the Second World War, the nation of proud, intensely patriotic, and dedicated Japanese have cultivated science and technology as a national product with such zeal and success that, within a few decades, Japan has become one of the richest and powerful technology nation. Despite their robot-like obedience and commitment, the Japanese society has preserved its cultural background. The socio-economic system has emerged to be capitalistic as far as the international dealings are concerned. Yet, as a society, Japanese down to every individual, are first committed to the State, then to the private companies they work for and lastly, to themselves. Thus, it is a queer mixture of capitalism and nationalism fueled by the export-oriented products of science and technology which sustain the nation.

In contrast to the Japanese society, the Americans have maintained their individualism and their intense desire and skills for translating science and technology. Their innovative and entrepreneurial spirit have made the United States of America the most powerful and richest technological leader of the free world. Their desire to fight communism has also helped to transform the concept of science and technology in the U.S.A. The undaunted spirit of enquiry by individualists in the society has been responsible for the growth of science for the sake of science. Thus, although society is taxed heavily to fuel the defence-oriented S and T, the innovative American continues to make individual contributions to science and society. The commercialization of science has had its effects on the breaking up of the society into individuals rather than socially and culturally united groups which formed America of the earliar days.

Science and Technology in the U.S.S.R. has grown on the basis that communism and science go hand in hand and derive strength from each other. This basis has become entrenched because of the need to propagate international communism in the face of the menacing capitalistic societies of the West. It is, therefore, not the society but the state which has controlled the development of science and technology in the U.S.S.R. Despite being "Slavish" to the system, the passive society has produced some of the finest scientists, partly because of the intense desire to be counted in the world community and partly because of the immense prestige, power and privileges given to the scientists and technologists in the U.S.S.R. Here is an example when political views of the state determine the future evolution of both science and society.

Science and the Indian Society

The composition of the Indian society is such that most of the social theories applicable to the West and the East break down here. On the social plane, India has special problems which defeat all socio-economic doctrines. In India our cultural, religious, linguistic and caste loyalties serve as emotional stimulus to disregard collective or national interest.

Over the years, independent Indian has realised the need and the value of scientific development. The fact is evident from the expenditure figures : in the first five year plan, Rs. 20 crores were allocated for science and technology; for the seventh five year plan something like Rs. 7,500 crores have been set aside for the development of S & T. Today, nearly 1% of the GNP is being spent on development of Science & Technology. Here it is pertinent to quote verbatim a part of the 1958 Government of India Scientific Policy Resolution "...... The dominating feature of the contemporary world is the intense cultivation of science on a large scale, and its application to meet a country's requirements It is this, which, for the first time in man's history, has given to the common man in countries advanced in science, a standard of living and social and cultural amenities, which were once confined to a very small privileged minority of the population. Science has led to the growth and diffusion of culture to an extent never possible before. It has not only radically altered man's material environment, but, what is of still deeper significance, it has provided new tools of thought and has extended man's mental horizon. It has thus influenced even the basic values of life, and given to civilization a new vitality and a new dynamism.

It is only through the scientific approach and method and the use of scientific knowledge that reasonable material and cultural amenities and services can be provided for every member of the community, and it is out of a recognition of this possibility that the idea of a welfare state has grown. It is characteristic of the present world that the progress towards the practical realisation of a welfare state differs widely from country to country in direct relation to the extent of industrialisation and the effort and resources applied in the pursuit of science."

While dealing with the impact of science (via Engineering and Technology) on Indian society, it is necessary to consider both its quantitative and qualitative aspects in relation to the two main types of societies that we have : the urban and the rural.

The impact of technological progress in urban India is clearly different from that in rural India. If in urban India, science has made its mark (to some extent) both in terms of improved lifestyle and adoption of scientific stand-point; in rural India, which counts for 80% of India, science has yet to fulfil its promise.

If a close study of the impact of science on Indian society reveals a somewhat unsatisfactory picture, it is basically due to deficiences or mismanagement in these vital areas: the education system; the rural development programmes.

Science and Rural India

It is a fact that even today, at the close of the twentieth century, science has failed to get assimilated in the social thought specially in rural India—an average Indian citizen views science as something outside his intellectual capacities and social pre-occupations.

As mentioned earlier, the advancement of a community is measured by the presence of science in that community. If India is still listed as an underdeveloped country, it is because the common Indian citizen is yet to be touched by the spell-casting wand of science.

Indian rural community has special problems. In spite of several handicaps (limited holding, poor resources, little risk-taking capacity and illiteracy), the Indian farmer today is not only in awe of this modern Messiah, but is also quite ready to be led by it. But, the needs of this vast majority must become a primary concern, if science in India is to emerge as a potential social reformer and to fulfil its promise.

If one analyses the cost/benefit ratio of the efforts put in by various R and D agencies in the context of country's socio-economic development (as measured by economic and social indicators), one has to regretfully come to the conclusion that the results are far from satisfactory. It is, therefore, imperative that a change in the direction of our scientific and technological efforts takes place : from high technology areas towards more relevant area related to rural population.

There is a lack of identification of the precise role of science and technology in rural development.

In order to achieve this identification/definition, scientists and technologists need to be used for extended periods in rural and forest areas and to get direct feed back from target rural population as well as from the administrative machinery at the district and panchayat level. Scientific agriculture has to form the core of rural development and must be supported appropriately. The people appointed for this job should have the required motivation and conviction as regards the pioneering role of science and technology in rural development.

Indeed, there is a need to establish several centres in India for continuously identifying and analysing problems in rural and backward areas where science and technology could play a significant role in finding economically attractive solutions. Interaction is required to be established between scientists and technologists on the one hand and between State government and district level field staff on the other. There is no doubt that for rural development, an integrated approach is needed with planning from bottom upwards instead of the reverse direction.

Although there is an aura of self reliance in many fields, yet science in India has failed to provide satisfactory support to rural development. In India, we need to put high technology, which is usually synonymous with sophisticated industry, modern offices and well-equipped labs, to use in finding solutions for pressing social deficiencies (such as drinking water, vaccinations, illiteracy, transportation and telecommunication), which need immediate attention and demand highly creative and innovative efforts.

Education and Research

Science and education are inseparable : science depends on education and education depends on science for its basic tools. The two have always supported and fortified each other. But, now, it would appear that the two are not keeping pace with each other : science is advancing much too rapidly and the education system is unable to mould itself with the same agility. In other words, in the present context science is supporting education much more effectively than the other way around. In India, the lacunae in areas of mass education and higher education, have hampered effective support to the growth and applications of science. With the inception of educational technology, science has not only redefined the philosophy of education, but is in the process of reorienting the entire learning-teaching process.

Our education system is full of contradictions. On the one hand there is a high percentage of illiteracy and on the other we count for one third of trained scientific manpower in the world. Both these sectors of society have so far failed (for different reasons) to contribute effectively towards social advancement. Actually there is a lack of communication and interaction between both these sectors of populations, each working on their own and existing in their own particular environments.

Certainly, the higher education system needs to be reoriented towards social relevance. Despite spectacular industrial growth, even today, studies in higher technology are dependent on foreign aid both in terms of books, instruments and even concepts. One of the reasons why Indian students feel that science is really not yet Indian is that we continue to read books written by western scientists and we continue to use instruments produced by these countries. It is important that our young students get a feeling of self-confidence by studying books written by eminent Indian scientists and by using indigenous scientific instruments and machinery. Another neglected area from the point of view of confidence building is that of indigenous research journals of high quality.

Although India's contributions in the fields of science and technology in the world has been substantial, it is a fact that in India, there is a lack of adequate facilities to fully harness the potentialities of young students. Though we have a large number of educated unemployed, there is a lack of skilled engineers, doctors and scientists in many areas. We need to make sure that education planners and manpower planners work together to avoid such mismatches.

There are also mismatches in the programmes taught in our institutes of higher technology, and actual needs of the nation. We train people for sophisticated industry, while most of our industry is not so advanced. Once students go abroad for specialisation, they do not find a suitable slot back home where they can adjust and make use of their knowledge.

Of course, it would be ideal if the infrastructure is so designed that the young people who have the privilege of undergoing higher education at considerable national cost, are in a position not only to find productive self-employment, but while doing so, also create job situations for some ten times the number who do not have the benefit of higher education.

Concluding Remarks

(i) Can India hope for a science based society ? The answer has to be emphatically Yes; there is no alternative. But, efforts have to be made to generate social synergy and the

(*Continued on page 16*)

STUDENTS WELFARE FUND

The Uttar Pradesh Government is reported to have created a students welfare fund with an amount of Rs. 5 crore to provide scholarships to brilliant and talented students and also to promote welfare of students.

According to the guidelines finalised recently, the scholarships to be given from the interest of the fund created for the purpose would be given to students who had obtained a minimum of 60 per cent marks provided the guardian's annual income does not exceed Rs. 2500/-. Students of universities, degree colleges, engineering or agriculture engineering or medical colleges studying in degree classes will be entitled for a scholarship of Rs. 90 per month and those in postgraduate classes will be given a monthly scholarship of Rs. 120. The students in engineering colleges, medical colleges and agriculture engineering would be entitled for a scholarship ranging from Rs. 120 to Rs. 150 per month. Students in technical institutions will also be provided scholarship facility of Rs. 75 per month.

The scheme also covers meritorious students of intermediate and high school classes and the quantum of scholarship to be given to them would be Rs. 60 and Rs 40 per month respectively. Special attention in providing scholarship at this level would be given to girl students. The scheme would also be applicable to students of senior basic schools studying between class VI and class VIII provided the income of guardians does not exceed Rs. 1,200 a year. The quantum of scholarship for the students of senior basic schools would be Rs. 25 per month.

For research scholars, an amount of Rs. 2,000 would be provided in one instalment. The scheme also provides facilities of financial help for talented boys and girls in sports who would also be provided financial assistance between Rs. 2,000 and Rs. 5,000/- in one instalment.

JNU Launches Computer Appreciation Programme

As part of the year-long programme of the Nehru Centenary Celebrations, the Jawaharlal Nehru University (JNU) has launched a Computer Appreciation Programme for students of Delhi schools which do not have computer teaching facilities. The JNU Vice-Chancellor, Prof. M. S. Agwani inaugurated the programme in the Government High School, Bijwasan, a Village near Delhi. Under the programme, lectures and demonstrations shall be organised by the faculty members of the School of Computer and Systems Sciences at JNU with a view to inculcating in the students an awareness about application of computer technology in day to day life.

While launching the programme, the Vice-Chancellor said that the best way to pay tributes to Pt. Nehru was to follow the path shown by the great visionary. He said that computer technology is developing at a very fast pace. It is, therefore, necessary that adequate training should be imparted among students to enable the coming generation to cope with the changing times.

The school at Bijwasan with 1100 students caters to the needs of 25 villages.

It is planned to cover one new School every month during the year long celebrations.

JNU also proposes to organise a short-term training course for the teachers of the schools during summer vacations when facilities would be provided to them to undergo training for about two/three weeks about the theory and practice of computers.

Making the UGC More Effective

The Administrative Staff College of India (ASCI), Hyderabad, it is reported, will make a comprehensive study of the internal management system and functioning of the UGC.

The study will also examine aspects like manpower planning, information system, and computerisation in the organisation. The ASCI will study the roles of key functionaries of the UGC and how the UGC can be made more effective in the context of the expectations of the universities in the country. For this purpose, a sample of a few universities of all hues—Central, State and Deemed—is to be taken and their views assessed.

News from Agril. Varsities

New Wheat Variety

The Indian Council of Agricultural Research (ICAR) has contributed to the development of a new high-yielding wheat strain—Veery, a spring bread wheat—capable of producing 10 per cent more grains than the "miracle" varieties that kicked off the green revolution of the 1970s. Developed at the Mexico-based International Maize and Wheat Improvement Centre (CIMMYT) out of the combination of spring wheat of India and winter wheat of Canada, Veery shows resistance to the diseases and environmental stresses often found in developing countries.

For its research accomplishment, which has once again led to breaking the wheat-yield barrier, CIMMYT got the Consultative Group on International Agriculture Research (CGIAR)'s King Boudouin award which it will share with 12 other International Agricultural Research Centres, including ICAR.

Veery has different names in different third world countries. Farmers call it Rusape in Zimbabwe, Numidie in Algeria, Dashen in Ethopia, Glennson in Mexico, Pak 81 in Pakistan, Olintepeque in Guatemala and by more than a dozen other names in other countries.

The new wheat line is now grown in on more than four million hectares worldwide. Veery line has also been used to produce locally adapted lines in over 25 countries and five continents. The area planted to Veery-based varieties will increase dramatically as seed becomes more readily available to farmers, according to CIMMYT scientists.

Many of the key traits in addition to yield, that have made the Veery wheat so popular with farmers can be traced to the winter wheat parents. These include improved resistance to two diseases of wheat, stripe rust and powdery mildew as well as some resistance to septoria diseases and leaf rust and superior tolerance to environmental stresses such as cold, excessive heat and drought. Other important traits of the Veery wheats are their efficient use of scarce inputs in low-input environments and their ability to respond exceptionally well as production improve.

The Veery wheat line originally resulted from an initial cross of Russian winter wheat, Kavkaz and a Mexican sprint wheat, Buho, in 1973. After further crossing and seven generations of testing at two sites in Mexico, the line was given a breeding name, Veery.

Sports News

Fellowships for Sports Research

The Sports Authority of India (SAI) has decided to give 10 fellowships of Rs. 20,000 each every year for initiating more experts in research work in different fields of sports sciences. Besides this, another Rs. 10,000 will be given as contingency grant to meet actual expenses on research, especially in the fields of sports nutrition, sports physiology, sports psychology and sports injuries. This will be in addition to separate project grants to be given by the SAI to institutions which undertake research projects in sports sciences.

The objective of the scheme is to involve sports scientists in the better development of sports by application of modern sciences and technology in sports training. The main stress will be on devising physical, physiological, psychological and medical evaluation tests for selected athletes, role of indigenous medicines in athletic training without violating doping regulations of the International Olympic Committee, sports anthropemetric studies, including genetic studies which have a bearing on the selection criteria of athletes, balanced diet and pre-competition diet for sportspersons based on Indian conditions and availability of diet, pattern and incidence of sports injuries prevalent in different games and in different parts of the country and research to devise correct sports apparel, shoes, etc.

The SAI has earmarked a sum of Rs. 4.25 lakh for this scheme this year.

Meanwhile, the SAI has also planned to spend about Rs. 9 lakh on promotion of indigenous games and material arts to preserve long-term traditions and cultural heritage of a particular region, notwithstanding the fact that these indigenous games and martial arts may not give any talent for modern games.

The SAI also proposes to offer special prizes and scholarships for writing books on indigenous sports and martial arts. The State Sports Councils and the State and national associations of indigenous games would be asked to conduct tournaments, demonstrations and seminars. The SAI has also planned to assist the Ladakh polo festival to be held during 1988-89.

In order to encourage mass participation of people in fitness and sports programmes, the SAI has decided to hold 27 national physical fitness festivals in different parts of the country during the National Physical Fitness Week to be observed from December 7 to 13 this year.

The SAI has earmarked a sum of Rs. 90 lakh for various national physical fitness schemes, including the conduct of sponsored races, setting up of jogging clubs and national level Bharatiyam. The SAI has planned to organise 100 sponsored races in different parts of the country this year and will provide an aid of Rs. 5000 to each race.

The Bharatiyam mass sports programme is on the lines of the Spartakiad of East European countries and it will include different activities as mass formations, callisthenics, rhythmic gymnastics, kalarlpayattu tanta, lezim, acrobatics, pyramids, yoga, free play, rope mallkhamb, pole exercise and display of skills of games and sports.

Instt of Physical Education & Sports Sciences

The Indira Gandhi Institute of Physical Education and Sports Sciences, set up under the auspices of the University of Delhi by Delhi Administration, aims to provide scientific training and coaching facilities to potential sports performers and prepare professional leaders in Physical Education, Health Education and Sports. The main emphasis of the Institute is :

- To provide a platform for potential sportsmen towards development of their talents for higher levels of performance through scientific means.
- To prepare competent leaders for Recreation/Heath Clubs and other leisure time activities.
- To train leaders for good social and human living with technical skills of man-management and human behaviour.
- To further the concept of 'Sports for All' and promote research in this direction so as to give a new dimension to the concept of fitness in the context of modern scientific society.
- To encourage participation in sports for balanced development of the body and attainment of general physical fitness.
- To realise the emphasis laid by the current National policies of Education and Sports in considering Physical Education and Sports as an integral part of the curriculum of schools and colleges.
- To cater for professional and academic leadership to the institutions of Physical Education and Sports Sciences in the country.

It is visualised that the Institute would serve as :

- Centre for documentation and mobilization of resources in the field of Physical/Health Education and Sports.
- Data Bank for all current and previous activities related to Physical Education and Sports in order to promote research in this field.
- Platform for organising professional seminars, conferences, workshops, clinics and competitions.
- Resource Bank for all activities related to Physical Education and Sports Sciences.
- Centre for co-ordination at international level in the implementation of policies and projects related to Physical Education ond Sports.
- Society for publication of literature on Physical/Health Education and Sports.

At present the Institute affers a 3-years Degree Course known as BSc (Physical Education, Health Education and Sports). Subject to the approval of the University of Delhi, the Institute proposes to introduce the following courses :

Master of Sports Sciences (Regular Courses of 2 years duration); Post Graduate Diploma in Health Education (1 Year); Master of Physical Education (Summer Course—3 Semesters); Post Graduate Diploma in Physical Fitness and Adventurous Sports (1 Year); Post Graduate Diploma in Officiating and Coaching (1 Year); Diploma in Sports Jounalism (3 Months); Diploma in Sports Management and Protocol (3 Months); Certificate Course in adapted Physical Education—Exercise Therapy, Rehabilitation, Postural Defects (6 Weeks); Certificate Course in Sports Psychology (6 Weeks); Certificate Course in Bio-mechanics of Sports/Kinesiology (6 Weeks); Certificate Course in Sports Physiotherapy (6 Weeks); Certificate Course in Kin-Anthropometry (6 Weeks); Certificate Course in Health Education and First-Aid (6 Weeks); Certificate Course in Measurement, Statistics and Evaluation in Physical Education and Sports (6 Weeks) Certificate Course in Exercise Physiology (6 Weeks); Certificate Course in Sports Nutrition (6 Weeks), Certificate Course in Weight Training (6 Weeks); Certificate Course in Sports Officiating and Interpretation (6 Weeks); Certificate Course in Soil Treatment and Marking of Play fields (6 Weeks); Certificate Course in Physical Fitness (5 Weeks); Certificate Course in Sports Photography and Presentation (6 Weeks); & Certificate Course in Sports Reviews and Commentaries (6 Weeks).

News from UGC

INSAT-1B Progrmme of UGC

Between 12th December to 20th Dec., 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

12.12.88

"Principles of Phase Stability"
"Small Scale Industry—II"

13.12.88

"A Case for Distance Education"
"Ayurveda Series—IV Sushruta & Surgery"

14 12.88

"Aerodynamics—Basic Theory of Flight"
"Nagaland"
"Nervous System in Man"

15 12.88

"Signals—II"
"Skylab : Outpost in Space"
"Understanding Poetry—II"

16.12.88

"Mister Klein Looks at Geometry"
"An Interview with Prof. A. Howish : Inter Planetary Disturbances—II"
"Clean Air—Healthy Living"

17.12.88

"Indian Stick Fighting—I"
"James Whistler : Etchings"
"An Insult to Civilization"

18.12.88

No Telecast

19.12.88

"The Heart of the Atom"
"Time Management : The Edge of Success"
"Orchids of Sikkim"

20.12.88

"Laser in Welding—I"
"World of Communication—Basic System Functions & Conversions"
"Pancha Karma—I : Purakvarma"

News from Abroad

Climate as the Common Heritage of Mankind

There is perhaps no stronger factor than climate which determines the global physical well-being of the peoples of the world in that it affects not only their health but the very means of their sustenance. That global climate and weather should, therefore, be declared part of the common heritage is a measure which fully falls in line with the UNESCO project on the rights of future generations to their environment, and on intergenerational responsibilities thereon.

The project, introduced by Dr. Salvino Busuttil, Director General, Foundation for International Studies at the University of Malta, at UNESCO seven years ago, aims at creating a global awareness of the common heritage which is to be bequeathed to future generations. It covers those resources which by their nature cannot and should not be appropriated by any one nation but should be harnessed and developed for the benefit of all men. They relate not only to seabed resources which will be fully protected, when the U.N. Convention of the Law of the Sea is ratified, but also to outer-space and Antartica, as well as to genetic engineering in all its manifestations. Ultimately, common heritage rests on the accumulated knowledge and culture of mankind, and the corpus of scientific and technological progress is part of the collective patrimony of our species, a guarantee of its unity and a condition of its continuity.

Regional meetings have been held in Latin America and in Asia; one is planned in Africa for next year followed by another one, for Europe and North America in 1990. It is hoped that by 1991, enough progress will have been registered to call, under U.N. auspices, a world conference which will affirm the right of future generations to their environment and put into place a supra-national mechanism to protect those rights through the development of resources for that common good emanating from the first legacy of Nature's master.

CHANDROTSAV—88

A four-day Inter Varsity North Zone Youth Festival was held at Chandra Shekher Azad University of Agriculture & Technology, Kanpur from November 13-16, 1988. The Youth Festival, dedicated to great patriot, Chandra Shekhar Azad, was attended by about 650 delegates from 21 North Zone Universities.

The Festival was inaugurated by Dr. Krishna Vir Singh Kaushal, Minister for Agriculture, U.P., who took the salute at the march past by the participating contingents. A colourful Folk Dance, sponsored by the U.P. Directorate of Cultural Affairs was presented on the occasion. The Chief Guest commended the efforts of the AIU and the Department of Youth Affairs & Sports in promoting the concept of the Inter University Youth Festivals. He mentioned that such Meets undoubtedly make the exuberant youth aware of the rich culture of all regions, communities and tribes of our vast land.

The competitive events commenced with the most fascinating item of the festival, namely, Folk Dances. The Holi Folk Dance by Haryana Agricultural University, Hisar was highly acclaimed. It will be recalled that the same contingent with the same item had won the National Award in 1986 and was sent to the Soviet Union to partipate in the Festival of India in the USSR in 1987. The Folk dancers of C.S. Azad University of Agriculture & Technology, Kanpur performed 'Rass' peculiar of Brij, Bhangra, Haryanvi, Kashmiri, Himachali and other regional dances. Both these dances were declared the best two by the judges.

A closed circut TV system provided facility of viewing to large number of people who could not be accommodated in Auditorium.

Classical Dance Event that followed the Folk Dances, was inaugurated by the great Kathak Wizard Birju Maharaj. The Classical Dances, as performed by the upcoming artists were not of as high a standard as expected, yet participants of Punjabi University, Patiala who presented in Jaipur Gharana style and that of Agra University who presented in Lucknow Gharana style made some impact on the audience. Both these participants were adjudged as the best two.

Classical Vocal Solo, Instrumental music, Painting and Quiz items were organised on the second day. Kailash Auditorium echoed with the rich Indian raagas reminding nostalgically of the days of Bade Ghulam Ali Khan, Amir Khan and Paluskar. Female voices dominated most of the show as Sunita Pandey, C.S. Azad University of Agrl. & Tech. (Mia Ki Tori) and Nivedita Uppal, Punjabi University, Patiala (Bada Khayal, Chhota Khayal) enthralled the audience with romantic nuances.

Classical percussion and non-percussion events were held at the same venue. Guru Nanak Dev University, Amritsar and University of Jammu, Jammu exhibited delightful tabla performance and caught the eyes of judges for obtaining the best two positions. In the non-percussion event, Sitar was heavily used by the participants which made the event a bit monotonous. However, Arvind Masiah, Agra University and Nirja Sharma, Punjabi University left indelible impression of their artistry. They were declared as the best two for this event.

In the Quiz preliminary round thirteen universities took part, which were required to answer thirty questions for the final round. Four universities that qualified for the final contest were Aligarh Muslim University, Agra University, C.S. Azad Univ. of Agriculture & Technology and Kanpur University. Dr. Rizvi conducted the contest for the final round in which Agra and Aligrah Universities claimed the first two positions.

A lively Group Discussion was held in honour of Pt. Jawaharlal Nehru, the late Prime Minister of India, whose birth centenary is being observed throughout the country. The topic was—"Nehru: Architect of Modern India". The speaker brought to light many facets of Nehru's life in impressive manner. The day coincided with the birthday of Paditji.

The Light Vocal items comprising Geets, Bhajans and Ghazals were rendered mellifluously. It started with a bhajan by Ritika Mehrotra of Lucknow Unversity—'Nache Nandlal Nachave Baki Maiyya'. Ku. Sunita Pandey, C.S. Azad, presented the song—'Geet mere kya sunega chand'. But Nivedita Uppal, Punjabi University, Patiala and Vishu Bhatnagar, Maharashi Dayanand University, Rohtak spell bound the audience with their enthralling pieces resulting in their selection as the best two.

Group songs were held during the evening and proved a big treat for the audience. The event commenced with Kashmir University presenting a sweet song in Dogri language. The theme of the song of Aligarh Muslim University, Aligarh was that we have to march ahead to diminish the darkness to become the torch bearers. The essense of the song was that the wife of a farmer requested her husband to bring her a 'Chunri' after sale of the harvest. C.S. Azad Univ. of Agrl. & Technology presented a fishermen's Folk Song, while the Haryana Agrl. University's presentation depicted Haryana as a fertile land and the simplicity of its people, language, food and clothes. Both the latter cited universities were selected as the best two.

The Theatrical events attracted maximum number of entries as almost all universities participated in one Act plays, Mime and Skits. Guru Nanak Dev University presented a lively play projecting the theme of Indian women's problem symbolically. The humorous presentation of M.D. University, Rohtak was commendable. Both the plays were declared as the best two. In skits, C.S. Azad University and Agra University stole the lime light, while Mime was claimed by M.D. University and C.S. Azad University.

A special guest performance was arranged during evening of the penultimate day in which youthful grand Kathak artist Madhukar Anand presented a treat to the audience. Santosh Kumar Nahar and Raj Kumar Nahar also presented jugalbandi on violin and tabla.

The Valedictory session was held at the Kailash Auditorium with Mrs. Ahmad, the wife of the Vice-Chancellor, as the Chief Guest. She gave away the prizes to the participants. A participation certificate and a Silver Medal were presented to each participant, while the contingent leaders were presented mementoes. Eventwise trophies were presented to various universities in the fields of Music, Dance, Theatre, Literary Activity and Fine Arts. The averall Championship was claimed by the C.S. Azad University of Agriculture and Technology, Kanpur. ☐

Inter-University North Zone Youth Festival 1988-89

RESULTS

(1) Music	
(a) ClassicalVocal Solo	C.S.A. University of Agril. & Technology, Kanpur. Punjabi University, Patiala.
(b) Calssical Instrumental Solo (Percussion)	Guru Nanak Dev University, Amritsar. University of Jammu, Jammu.
(c) Classical Instrumental Solo Non Percussion)	Agra University, Agra Punjabi University, Patiala.
(d) Light Vocal (Indian)	Punjabi University, Patiala. M.D. University, Rohtak.
(e) Western Vocal (Solo)	C.S.A. Univ. of Agril. & Technology, Kanpur. Aligarh Muslim University, Aligarh.
(f) Group Song (Indian)	C.S.A. Univ. of Agril. & Technology, Kanpur. Haryana Agril. University, Hisar.
(g) Group Song (Western)	C.S. Azad Univ. of Agril. & Technology, Kanpur. Dayalbagh Educational Instt., Agra.
(2) Dance	
(a) Folk/Tribal Dance	Haryana Agril. Univ., Hisar. C.S.A. Univ. of Agril. & Tech., Kanpur.
(b) Classical Dance	Punjabi Univ., Patiala. Agra University, Agra.
(3) Literary Event	
(a) Quiz	Agra University, Agra. Aligarh Muslim Univ., Aligarh.
(4) Theatre	
(a) One Act Play	Guru Nanak Dev. Univ., Amritsar. M.D. Univ., Rohtak.
(b) Skits	C.S.A. Univ. of Agril. & Technology, Kanpur. Agra Univ., Agra.
(c) Mime	M.D. Univ,, Rohtak. C.S.A. Univ. of Agril. & Technology, Kanpur.

(5) Fine Arts	
(a) Spot Painting	Aligarh Muslim Univ., Aligarh. University of Kashmir, Srinagar.
(b) Collage	C.S.A. Univ, of Agril & Tech., Kanpur. University of Jammu, Jammu.
(c) Poster Making	University of Jammu, Jammu. Jamia Millia Islamia, New Delhi.
(d) Clay Modelling	C.S.A. Univ. of Agril, & Tech., Kanpur. Thapar Instt. of Eng. & Tech., Patiala.
(e) Cartooning	Punjab Agril. Univ.; Ludhiana. Rohilkhand University, Bareilly
Champion	
Music	C.S. Azad Univ. of Agril. & Technology, Kanpur.
Dance	Haryana Agricultural University, Hisar.
Literary Event	Agra University, Agra.
Theatre	Maharshi Dayanand University, Rohtak
Fine Arts	C.S. Azad Univ. of Agril. & Technology, Kanpur.
Well disciplined team	University of Kashmir, Srinagar Rohilkhand University, Bareilly
Overall Champion	C.S. Azad University of Agril. & Technology, Kanpur.

SCIENCE AND SOCIETY

(*Continued from page 9*)

requisite blend of political will and professional skills to bring the benefits of the latest developments to the common man.

Of course, the very first requirement is Mass education. As Nehru said as far back as 1962, "you cannot have an illiterate nation having an industrial revolution."

Science should be diffused in comman man's language so that it can become a part of the social reality. We need to bring science out of the laboratories on to the market place, and to do that housewives and the poorly educated rural population need to be introduced to science through specially designed courses.

Media should be made aware of their role in popularising science and in achieving the aforesaid objectives. Media can play a pivotal role in imparting the scientific temper to the masses.

(ii) Science and society must serve each other and Man must be centre rather than the machine. Studies in science and technology must be complimented by studies in sociology. Such studies will provide the basic data regarding the possible lines along which S & T can help the Indian society to move ahead, the problems that might arise and how to deal with those problems with a scientific stand point.

(iii) Unless the social function of science and technology is given precedence over other uses to remove the drabness of the life of the human beings, the great truimphs of science in this century would remain meaningless.

The proponents of science and technology are also members of society and citizens of a country. Some of them will live in their own sheltered and ivory tower world which will be accepted by the society if their efforts push the frontiers of human knowledge. But, most others must take responsibility of applying their Professional skills to societal functions and needs which are heavily based on science.

(iv) Science and Technology must be monitored to play an essential role in day to day life and help in solving pressing national problems: drinking water, vaccinations, illiteracy and improved transport and telecommunication. Incidentally, these problems are also the main hurdles in the growth of S & T. The scientific community must examine the relevance of S & T programmes in the Indian context, and develop indigenous equivalents. Importing technology on a continuing basis is not the answer because a nation which continues to depend on second hand technology can never make the frontline.

(v) In the final analysis, given all the ingredients for progress, the pace and quality of progress will depend on the social management of scientific resources and the blending of these resources and ensuing technology in a manner that will generate symbiosis and social synergy to provide us a powerful motive force for the growth of our society in future in harmony with the world of homonized science. ☐

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

CURRENT DOCUMENTATION IN EDUCATION

A List of Select Articles culled from Periodicals received in the AIU Library during October, 1988

EDUCATIONAL PHILOSOPHY

Jenkins, David. What is the purpose of a university—and what light does Christian faith shed on this question ? *Studies in Hr Edn* 13(3), 1988, 239-47.

EDUCATIONAL PSYCHOLOGY

Beswick, David and Ramsden, Paul. Curiosity and learning with understanding in the first year. *J Hr Edn* (Delhi) 13(1-3), 1987-88, 29-46.

Malik, J.S. Relationship between personality factors and teaching success in science. *Prog Edn* 63(3), 1988, 60-62.

Sarma, M.K. and Baruah, M.K. Distribution of intelligence among students pursuing different courses of higher education. *J Hr Edn* 10(3), 1985, 262-70.

EDUCATIONAL SOCIOLOGY

Altbach, Philip G. The foreign student dilemma. *J Hr Edn* (Delhi) 11(1 & 2), 1985-86, 89-110.

DRAFT NATIONAL Perspective Plan for women (1988-2000 A.D.) *New Frontiers Edn* 18(3), 1988, 98-161.

Sankaran Nair, V. The student community in pre-war Indian politics. *J Hr Edn* (Delhi), 10(3), 1985, 225-32.

Shamsuddin, Student indiscipline : Its cause and cure. *The Edn. Q.* XL(1), 1988, 21-3.

Sharma, R.R. Campuses of higher education : Genesis of unrest. *J Hr Edn* (Delht), 11(1&2), 1985-86, 187-90.

EDUCATIONAL POLICY & PLANNING

Khullar, K.K. 1987—A year of education. *The Edn Q* XL(1), 1988, 1-5.

Mahanta, D. Coordinating education and development. *Yojana* 32(20), 1988, 12-18.

EDUCATIONAL ADMINISTRATION

Grossman, Robert J. The great debate over institutional accountability. *Coll Bd Rev* (147), 1988, 4-6, 38-42.

Higginson, J.H. Calcutta University Commission. *J Hr Edn* (Delhi) 10(3), 1985, 215-24.

Honig, Bill. The key to reform : Sustaining and expanding upon initial success. *Ednl Admn Q* 24(3), 1988, 257-71.

Padmanabhan, C.B. Orientation programmes in management of university finances. *J Hr Edn* (Delhi), 11 (1&2), 1985-86, 211-16.

CURRICULUM

Banerji, Meera and Krishna Mohan. General English syllabuses : A critical review. *J Hr Edn* (Delhi) 10(3), 1985. 233-43.

TEACHERS & TEACHING

Bhardwaj, K.S. Facilitative effects of Germane humour on learning. *Indian Ednl Rev* 23(1), 1988, 73-81.

Saxena, A.K. Training programme for college teachers. *J Hr Edn* (Delhi), 10(3), 1985, 273-83.

Weimer, Maryllen Gleason, and others. Instructional observation : Caveats. concerns and ways to compensate. *Studies Hr Edn* 13(3), 1988, 285-90.

EDUCATIONAL RESEARCH

Roy, S. and others. Evaluation research in education. *Edn Q* XL(1), 1988, 6-16.

EDUCATIONAL TECHNOLOGY

Ghani, Jawaid Abdul. Diffusion of microcomputers in an academic community. *Computer Edn* 12(4), 1988, 545-51.

EDUCATIONAL EVALUATION

Albert, D. Adjustable internal assessment. *J Hr Edn* 10(3), (Delhi) 1985, 286-90.

Doolittle, Allen E, and Cleary, T. Anne. Gender-based differential item performance in mathematics achievement items, *J Ednl Measurement* 24(2), 1987, 157-166.

Hassan, Parveen Akhtar. A paradigm for the success of semester. *J Hr Edn* (Delhi), 10(3), 1985, 290-91.

McMillan, James H. Beyond value-added education : Improvement alone is not enough. *J Hr Edn* (Ohio), 59(5), 1988, 564-79.

ECONOMICS OF EDUCATION

Bhaskara Rao, P. The UGC study centres : Nature and performance : A case study of Andhra University centre. *J Hr Edn* 10(3) (Delhi), 1985, 291-94.

Brouder, Kathleen. Encouraging families to save for college. *Coll Bd Rev* (147), 1988. 20-25.

Deousker, M. and Khare, H.P. Cost of higher education per student. *J Hr Edn* (Delhi) 10(3), 1985, 247-62.

Hansen, Janet S. Pay now. Go later : College prepayment and savings plans. *Coll Bd Rev* (147), 1988, 8-11, 25-29.

PHYSICAL EDUCATION & SPORTS

Haggerty, Terry R. Designing control and information systems in sport organizations : A cybernetic perspective. *J Sport Management* 2(1), 1988; 53-63.

VOCATIONAL EDUCATION

Kuppuswamy, G and Natarajan, R. Media in engineering education. *J Hr Edn (Delhi)* 11(1&2), 1985-86, 127-35.

Natarajan, R. Cybernetic considerations and engineering education. *J Hr Edn (Delhi)* 10(3), 1985, 169-75.

EDUCATIONAL JOURNALISM

Altbach, Philip G. The international dimensions of scholarly journals, *J Indian Edn* 13(6), 1988, 3-12.

Nanzhao, Zhou. International distribution of knowledge: A developing country perspective. *J Indian Edn* 13(6), 1988, 30-5.

LIBRARIES & BOOKS

Malhotra, Nirmal. Dissenting academics and their libraries. *J Hr Edn (Delhi)* 13(1-3), 1987-88, 134-8.

ADULT EDUCATION

Livneh, Cheryl and Livneh, Hanoch. Factors differentiating high and low participants in lifelong learning. *Ednl Psy Measurement* 48(3), 1988, 637-46.

DISTANCE EDUCATION

Chaudhary, Sohanvir. Distance education through television experience from the community viewing scheme. *New Frontiers Edn* 18(3), 1988, 85-91.

Samant, Chitta R. Open learning systems and educational mass media : An analysis. *J Hr Edn (Delhi)* 10(3), 1985, 283-86.

COMPARATIVE EDUCATION & COUNTRY STUDIES

Mathieson, Margaret and Bernbaum, Gerald. The British Disease : A British tradition ? *British J Ednl Studies* 36(2) 1988, 126-74.

Patel, Surendra J. The swift narrowing of the educational distance between the developed countries and the Third World : 1950 to 1981. *J Hr Edn (Delhi)* 10(3), 1985, 143-52.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

BIOLOGICAL SCIENCES

Biology

1. Bhadauria, Tuneera. *Ecology of earthworm in soil cosystems at higher elevation of Meghalaya.* NEHU. Prof P.S. Ramakrishnan, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi.

2. Sozhamannan, S. *Molecular and recombinant DNA analysis of the Rgl system : I-rgl B locus.* Madurai.

Biochemistry

1. Narasimham, P. Lakshmi *Biochemical studies in Malignancy.* Osmania.

2. Ravinder Kumar. *Some biochemical factors affecting the regulation of starch and protein accumulation in the developing cereal grains.* PAU.

3. Ray, Amit. *Studies on a storage protein of Psophocapur tetragonolobus* Calcutta.

4. Singh, Jagdish. *Studies on active bite groups and chemical reaction mechanism of isocitrate lyase of castor seedling endosperm (Ricinus communis).* BHU. Prof. O.P. Malhotra, Department of Biochemistry, Banaras Hindu University, Varanasi.

5. Sowbhagyalakshmi. *Biochemical parameters in cance of brest.* Bangalore, Dr. P.S Veerabhadrappa, Prof, Department of Biochemistry, Central College, Bangalore.

Microbiology

1. Beri, Harinder Krishan. *Characterization of mycotoxic principles of selected molds isolated from dried, smoked and cured fish.* Panjab.

2. Bora, Lohit Chandra. *Studies on phylloplane microflora of mungbean, Vigna radiata (L.) Wilczek in relation to Xanthomonas campestris pv. vignaeradiatae dye.* HAU.

3. Dixit, mayuri Krishnakant, *Surveillance of Neisseria meningitidi in Baroda (Gujarat).* Baroda.

Botany

1. Bandyopadhyay, Patralika. *Factors involved in the sex chromosomal and cytochemical changes in development of abnormal conceptuses.* Calcutta.

2. Gangwar, Lalta Prasad. *Salt stress physiology of a fodder legume berseem (Trifolium alexandrinum L).* Rohilkhand. Dr. K.A. Varshney, Bareilly College, Bareilly.

3. Khare, Sunil Kumar. *Effect of thermal discharges and fly ash on the aquatic flora around Sarni and Koradi thermal power stations.* HS Gour. Dr. K.S. Unni, Department of Botany, Govt Post Graduate College, Chhindwara.

4. Mahajan, Nishikant Rajaram. *Studies in the flora of intertrappean series of India.* Nagpur. Dr. M.T. Sheikh, Department of Botany, Institute of Science, Nagpur.

5. Manimohan, P. *Taxonomic studies on Agaricales of Kerala.* Calicut. Dr. K.M. Leelavathy, Reader, Department of Botany, University of Calicut, Calicut.

6. Manjit Singh. *Effect of some metabolic inhibitors on the rooting response of hypocotyl cuttings of Phaseolus mungo and associated biochemical changes.* Punjab.

7. Mathew, Philip. *Floristic studies on the flowering plants of Nilambur.* Calicut. Dr. V.V. Sivarajan, Reader, Department of Botany, University of Calicut, Calicut.

8. Mitra, Sampa. *Pesticidal effects of biochemical defence of jute plants in relation to anthracnose disease.* Calcutta.

9. Mukhopadhyay, Maitreyi. *Cytomorphological studies on Vicia faba L. in in-vivo and in vitro conditions with special reference to the effect of the mutagenic agents.* Calcutta.

10. Muthuchelian, K. *Bioproductivity studies of some leguminous and non-leguminous plants in semi-arid ecosystem.* Madurai.

11. Narayanan Unni, P. *Studies on cecidozoan and cecidophytan galls of Malabar.* Calicut. Dr. V.J. Philip, Prof. Department of Botany, University of Calicut, Calicut.

12. Nayyar, Harsh Kumar. *Metabolic changes associated with elongation cotton fibres.* PAU.

13. Pratti Prasad. *Physiological and biochemical studies of nodulated and non-nodulated seedlings of pigeonpea, Cajanus cajan (L.) Millsp.* Andhra.

14. Raghuwanshi, Avadh Naresh. *Studies on orchids of North East India: Influence of ecophysiological factors on asymbiotic and symbiotic germination.* NEHU. Prof. R.R. Mishra, Department of Botany, North Eastern Hill University, Shillong and Dr. P. Tandon, Department of Botany, North Eastern Hill University, Shillong.

15. Sandhu, Harjinder Singh. *Interspecific hybridization studies in genus Cyamposis.* HAU.

16. Sandhu, Sardul Singh. *Epizootiological studies on Beauveria bassiana parasitizing Heliothis armigera Hub., pod borer of gram (Cicer arietinum Linn.).* Durgawati.

17. Shashi Bala. *Karyomorphologic and chemotaxonomic observations on Setaria.* PAU.

18. Shyam Sunder Rao, N.S. *Studies on macro-fungi of few forest localities of A P., India.* Osmania.

19. Singh, Chandra Madhaw. *Biosystematic studies of some leguminous plants of Parasnath Hills.* Magadh.

20. Vaideshwara, T.S. *A survey of the anatomy of the Boronia leaf in relation to the taxonomy of the genus.* Bangalore. Dr. T. Ananda Rao, Karnataka Associate for the Advancement of Science, Central College, Bangalore.

21. Vallika Devi, K. *Ecosystem analysis of grasslands near Bhavnagar.* Bhavnagar. Dr. B.R. Pandit.

Zoology

1. Ataur Rahman. *Taxonomic studies on magachilid bees of Haryana.* HAU.

2. Biswas, Parthapratim. *Formation and function of Byssus apparents in selected bivalves of India.* Calcutta.

3. Nath, Bimalendu Bikash. *Studies on gene expression.* BHU. Prof. S.C. Lakhotia, Department of Zoology, Banaras Hindu University, Varanasi.

4. Pandian, R. Selvaraj. *Exogenous and endogenous components controlling the biting rhythm in a mosquito, Armigered subalbatus (Coquillett).* Madurai.

5. Patel, Haresh Ramubhai. *Some observations on hormonal and neuronal regulation of preputial gland functions in male albino rats, Rattus norvegious albinus.* Baroda.

6. Ramani, N. *Studies on mites associated with economically important plants.* Calicut. Dr. M.A. Haq, Acarology Division, Department of Zoology, University of Calicut, Calicut.

7. Samuel, George. *Studies on the feeding and breeding biology of the catfih, Mystus seenghala in the natural waters of Punjab.* PAU.

8. Samuel, Thomas. *Field and laboratory studies on the persistence, binding and degradation of radiolabelled DDT and HCH in a sandy loam soil in India.* Delhi.

9. Sharma, Kaushal Kishore. *Field studies in birds: Environmental and physiological correlates.* BHU. Dr. Asha Chandola, Department of Zoology, Banaras Hindu University, Varanasi.

10. Sindhu Kumari. *Physiological studies on freshwater prawn (Macro-branchium nobilii Henderson and Mathai)* Madurai.

11. Singh, Sukh Mahendra. *In vitro activation of murine macrophages and lymphocytes with cisplatin, release of tumor cytolytic factors and their interaction with tumor cells.* BHU. Dr. Ajit Sodhi, Reader, Department of Zoology, Banaras Hindu University, Varanasi.

12. Singh, Usha Kiran. *Biochemical studies in developing rat brain during nutritional deprivation.* BHU. Prof. K.N. Agrawal, Department of Paediatrics, Institute of Medical Science, Banaras Hindu University, Varanasi.

Medical Sciences

1. Bhattacharyya, Kalpa. *Evaluation of Hibiscus rosa sinensis flower extract as an antifertility agent in laboratory mammals.* Calcutta.

2. Chandy, Thomas. *Fibrinogen-polymer interaction influence of plasma components.* Sree Chitra. Dr. C.P. Sharma, Head, Department of Bio-Surface, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum.

3. Mishra, Brahmeshwar. *Study of multiple emulsions as potential drug delivery system for prolonging the release of pentazocine.* BHU. Dr. J.K. Pandit, Department of Pharmaceutics, Institute of Technology, Banaras Hindu Universiiy, Varanasi.

Agriculture

1. Babura, Mungse Haribhau. *Seasonal variability in dry matter production, growth parameters and heat unit requirement in pearl millet (Pennisetum typhoides (Burm) Stapf and Hubb.)* MP Agrl. Dr. D.G. Bhapkar, Ex-Advisor (Education), Maharashtra Council of Agricultural Education and Research, Agricultural College Compound, Pune.

2. Bhagawati, Promode Chandra. *Weed control studies in wheat under different levels of nitrogen.* HAU.

3. Boora, Khazan Singh. *Genotype and environments interaction, hybrid vigour and combining ability studies for yield and quality components in soybean, Glycine max (L) Merrill.* HP Krishi. Prof L.N. Singh, Department of Plant Breeding, Himachal Pradesh Krishi Vishwavidyalaya, Palampur.

4. Das, Rajendra Prasad. *Studies on weed control in grapes (Vitis vinifera L.) in vineyard and nursery.* HAU.

5. Dongre, Tanaji Krishnaji. *Studies on the host plant relationships of the spotted bollworm of cotton, Earias (Fabricius) vittella (Lepidoptera : Noctuidae).* MP Agrl. Prof. G.W. Rahalkar, Head. Pest Control Section, Bhabha Atomic Research Centre, Trombay, Bombay.

6. Kalita, Bhumidhar. *Spatial variability of some soil properties and productivity potential appraisal of an agricultural farm.* HAU

7. Mohinder Paul. *Simulation approach for optimal allocation of water resources in a tract.* PAU.

8. Oraon, Paras Nath. *Success of cuttage in guava (Psidium guajava L).* Birsa Agrl.

9. Pandey, Dhirendra Kumar. *Studies on some important aspects of soil-plant sulphur.* BHU. Dr. R.C. Tiwari, Reader, Department of Soil Science and Agricultural Chemistry, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

10. Roy, Upendra Bahadur. *A study on yield gap and constraint analysis of rice crop in Ranchi District, Bihar.* Birsa Agrl.

11. Singh, Ashok Kumar. *Genetics of powdery mildew resistance and yield components in peas (Pisum sativum L).* BHU. Dr. J. Singh, Department of Genetics and Plant Breeding, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

12. Singh, Kamleshwar. *Studies on the effect of P.G.R. and etiolation on propagation of guava (Psidium guajava L).* Birsa Agrl.

13. Singh, Narendra. *Effect of seed size, spacing, haulm cutting and growth regulators on seed potato, Solanum tuberosum L. crop cv. kufri badshah.* HAU.

14. Singh, Raj Kumar Somorjit. *Studies on blast disease of paddy and its control in Chota Nagpur, Bihar.* Birsa Agrl.

15. Subhadra. *Response of calli and whole plants to salt stress in different wheat genotypes.* HAU.

16. Thakur, Om Prakash. *Effect of manurial schedules on the incidence of stalk rot and economic characters in cauliflower*. YS Parmar. Dr. P P. Sharma, Department of Vegetable Crops, College of Horticulture, Solan.

17. Yadwinder Singh. *Inter-relationship of stage of harvesting and time of storage on the composition, milling, cooking and nutritional quality of some high yielding rice varieties of Punjab.* PAU.

Animal Husbandry

1. Bhela, Sham Lal. *Studies on the effect of folligon chorulon and prid on plasma hormonal profile and ovarian cyclicity in postpartum anoestrous murrah buffaloes.* HAU.

2, Chand, Surendra. *Nutritional evaluation of neem seed meal in chicks.* Rohilkhand. Dr. V.R. Sadagopan, Indian Veterinary Research Institute. Izatnagar.

3. Chhabra Ashok Kumar. *Genetic analysis of sow productivity and preweaning traits in large white pigs.* Rohilkhand. Dr. S.S. Bhatia, Indian Veterinary Research Institute. Izatnagar.

4. Dhiman, Prem Chand. *A study of the dairy cattle and buffalo management practices and milk utilization pattern in the adopted and non-adopted villages in Hisar District.* HAU.

5. Nair, S. Prabhakaran. *Studies on foot and mouth disease virus, type Asia I and type O in cell culture systems and immune response of inactivated vaccines in sheep.* Rohilkhand. Dr. A K. Sen, Indian Veterinary Research Institute, Izatnagar.

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-110067

Advt. No. A&E-II/8/88

Applications are invited for the following posts :

1. **Assistant Director in Adul Continuing Education and Extension Unit (leave vacancy)** : E Q. : (a) a good academic record in the subject of Adult-Continuing Community/Extension/Education/Community Development from a recognised Indian University or an equivalent degree from a Foreign University; (b) M Phil or Ph.D. in a subject related to adult learning or Ph D. in a subject under Social or Education/ Evidence of published learning materials and learning resources on areas listed in (a) above or published research in any of the relevant area/areas indicated above. **OR** (a) Good academic record in the subject of Social Sciences/Social Work/Humanities / Education/Sciences/ Home Science; (b) Post Master's diploma in Adult and Continuing Education from a recognised Indian University or an equivalent diploma/ degree from a Foreign University and (c) M.Phil or a Ph.D. in a subject related to adult learning or a Ph.D. in a subject uuder Social Sciences or Education or Evidence of published learning materials and learning resources in adult/ continuing/community/extension education/community development or published research in any of these area/ areas. **D.Q.** : (a) A candidate holding a Ph.D./M.Phil degree should possess atleast a 2nd class Master's degree; **OR** A candidate without a Ph.D. degree would possess a high second class Master's degree and second class in the Bachelor's degree; **OR** A candidate not possessing Ph.D. degree but possessing second class Master's degree should have obtained first class in the Bachelor's degree.

About five years experience of field work/teaching or research in a subject having bearing on Adult/Continuing Extension / Community / Non - Formal Education or Community Development. This condition may be relaxed on the recommendations of the Selection Committee.

(2) **Research Associate in Soviet Studies** : **E.Q.** : (a) A doctoral degree or research work of an equally high standard in Sovet Studies; (b) Good academic record with high 2nd class Master's degree in the relevant subject of Social Sciences. **D.Q.** : Relevant published work of academic interest and working knowledge of Russian language.

(3) **Research Associate in Gulf Studies Programme** : **E.Q.** : (a) Ist or high 2nd class Master's degree in the field of Social Sciences or Modern Arabic/ Persian literature or Islamic Studies; and (b) A Ph D. or published work of comparable merit in the field of West Asian Studies or Modern Arabic/ Persian Literature.

Note : Candidates would give a synopsis of the Research Project that they would like to undertake relating to the Gulf area).

Scales of Pay

Assistant Director : Rs. 700-1600 (pre-revised)

Research Associates : Rs. 1200-1900 (pre-revised)

Category 'A' Rs. 2200-100-2700,
Category 'B' Rs. 2700-100-3200,
Category 'C' Rs. 3200-100-3700,
Category 'D' Rs. 3700-125-4325.

Age limit for Research Associates : 45 years for men and 55 years for women candidates. 10% of the posts of Research Associates are reserved for SC/ST candidates.

Application forms alongwith necessary details may be obtained free of cost in person or by sending a self-addressed envelope (23 cm × 10 cm) duly stamped, to the Deputy Registrar (Academic & Estt. II), Room No. 204-B, Administrative Block, Jawaharlal Nehru University, New Delhi-110067. The applications in the prescribed form complete in all respects duly forwarded by the competent authority (for those in service) should reach this University by **December 9, 1988**.

(Abbreviations—EQ=Essential Qualifications, DQ=Desirable Qualifications)

Indian Council of Medical Research

The Council proposes to appoint a **Senior Research Officer (Medical)** for the Hqs. Office of the Council, New Delhi.

Job Description : The incumbent will assist (i) in monitoring ongoing experimental and clinical studies on selected traditional remedies/ medicinal plants in different parts of India. (ii) The managerial and technical aspects of research strategies of ICMR in the field of traditional medicine research.

Qualification and Experience

Essential : (i) MBBS from a recognised University with at least 8 years research experience on clinical and experimental evaluation of medicinal plants/traditional remedies in a reputed Teaching/Research Organization. (ii) In case of candidates possessing Doctorate or equivalent postgraduate degree in a bio-medical subject (Medicine, Paediatrics, Phamacology, Pathology and related discipline) and five years research experience preferably with reference to clinical and experimental evaluation of Medical Plants/Traditional remedies.

Desirable : A doctorate or equivalent postgraduate medical qualification.

Salary/Condition of Service : The scale of pay attached to the post is Rs. 3000-100-3500-125-4500 plus usual allowances as per Central Govt. Rules. Non-Practicing allowance is admissible to Medical Graduates only, as per rules of the Council. Private practice is not allowed. Benefits of pension admissible.

Age : Below 45 years. SC/ST candidates allowed relaxation in accordance with Government of India Rules.

Candidates called for interview will be paid 2nd class return fare on production of his/her travel vouchers/receipts.

Applications from employees working in Govt. Departments, Public Sector Organisations and Govt. funded Research agencies should be forwarded through proper channel.

Applications can be obtained from the office of the Director General, Indian Council of Medical Research, Post Box 4508, Ansari Nagar, New Delhi-110029 **on or before 15th December, 1988**. Forms duly completed should be sent to the Director General, Indian Council of Medical Research, Post Box 4508, Ansari Nagar, New Delhi-110029 with a crossed Indian Postal Order for Rs. 8/- payable to Director General. ICMR, New Delhi. SC/ST candidates are exempted from this payment. Incomplete and late application will not be entertained. Forms duly completed should reach the ICMR Office **on or before 26th December, 1988**.

UNIVERSITY NEWS, MONDAY, NOVEMBER 28, 1988 Regd. No. R.N. 7180/63 Delhi Postal Regd. D(C)1086

Post Graduate Institute of Medical Education & Research, Chandigarh

CORRIGENDUM

The following modifications in item No. 11 of the admission notice No. 4/88 (Acad) of this Institute published in this paper on 19th September. 1988 for the seats of Senior Residents for D.M./M.Ch. courses for January, 1989 session are notified for the information of all concerned :

The number of seats for the courses will now be as under :

D.M. Courses

1. Cardiology —3
2. Clinical Pharmacology —2
3. Endocrinology —2
4. Gastroenterology —2
5. Nephrology — 1

M.Ch. Course

Urology —3

(i) Two seats in the subject of Cardiology and one seat each in the subjects of Clinical Pharmacology, Endocrinology, Gastroenterology and Urology are reserved for candidates belonging to Sch. Castes/Tribes.

(ii) There is no change in the number of Senior Residents notified in admission notice No. 4/88 (Acad) for M.Ch. courses for various categories in the subjects of Neuro-Surgery (1 open), Plastic Surgery (2 open and one reserved for Sch. Caste/Tribe) and Cardiovascular & Thoracic Surgery (2 open). The total number of vacancies of Senior Residents for D.M./M.Ch. courses in the various subjects for the said session will now be 19 instead of 17 as was previously notified.

(iii) Upper age limit on 1.1.89—Not more than 35 years for general candidates and 40 years for candidates belonging to Scheduled Castes/Tribes and also for ex-service men and commissioned officers including E.C.O./S.S.C.Os. released or being released on satisfactory completion of assignment. No upper age limit restriction for deputed/sponsored candidates.

(iv) Candidates due to appear in MD/MS examinations during November-December, 1988 can also apply. They will be admitted to the entrance test only if they supply the result of their examination from the Univesity concerned atleast two days before the entrance test.

(v) Applications for D.M. courses in the subjects of Cardiology, Clinical Pharmacology, Endocrinology, Gastroenterology and M.Ch. course in Urology are invited from candidates belonging to Scheduled Castes/Tribes and from general category candidates for D.M. course in Nephrology, on prescribed form. Candidates who have already applied in response to admission notice No. 4/88 (Acad.) need not apply afresh. Their previous applications will be considered except for D.M. (Nephrology) course.

Application form and detailed information are available from the office of the undersigned either personally on payment of Rs. 5/- at the counter from 11 AM to 12 Noon on all working days and 3 PM to 4 PM on all working days except Saturdays, or by post for which the request must be accompanied with a self addressed envelope (size 28 x 10 cms.) bearing postage stamps of Rs. 3.40 and crossed postal order for Rs. 5/- drawn in favour of the Director.

(vi) Those applying for the reserved seats must append with their applications a certificate from the District Magistrate concerned in support of their claim. No other certificate will be entertained.

(vii) The application must be accompanied with non refundable fee of Rs. 30/- in the form of postal order drawn in favour of the Director for each of the courses mentioned above. A candidate appplying of more than one subject is required to submit separate application, complete in all respects, for each subject.

CLOSING DATE FOR RECEIPT OF APPLICATIONS IS 24.12.88

CANCELLATION

It is notified for general information that the seat of Senior Resident for D.M. (Nephrology) course advertised in admission notice No. 4/88 (Acad.) published in this paper on **19th Sept. 1988** has been cancelled. The application fee of the candidates is being refunded.

REGISTRAR

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University News

MONDAY, DECEMBER 5, 1988 Rs. 5.00

Association of Indian Universities

63rd Annual Meeting

काशी हिन्द विश्वविद्यालय

Our Hosts : Banaras Hindu University

Indian Institute of Technology, Madras

NATIONAL SUPERCONDUCTIVITY FELLOWSHIP

Applications are invited from suitable candidates for basic research/applied research on superconductivity in the research projects financed by the Ministry of Science and Technology, Government of India, in the following Departments/Centres at the Institute :

Chemistry, Physics, Metallurgical Engineering, Regional Sophisticated Instrumentation Centre (R.S.I.C.), Materials Science Research Centre (M.S.R.C.). Opportunities exist for registration for the Ph.D. programme at the Institute, subject to rules and regulations framed and made applicable from time to time.

Minimum Educational Qualifications

Master's degree in Chemistry (Inorganic/Physical/Solid State)/Physics (With Solid State Physics) with First Class or minimum 60% marks or equivalent and having a valid GATE score of not less than 70 percentile/qualified in UGC/CSIR Fellowship tenable from the current year in the relevant areas for fellowships i Chemistry, Physics, R.S.I.C. & M.S.R.C. Master's degree in Metallurgical Engineering/Materials Science/ Materials Technology/Production Engineering with a First Class or minimum 60% marks or equivalent fo fellowship in the Department of Metallurgical Engineering. Some experience in Material Processing/Processing of Ceramics will be desirable.

Fellowship

Holders of Postgraduate Degree in scientific disciplines other than Medical and Engineering	Rs. 1800/- p.m. for the first two years & Rs. 2100/- p.m. for the subsequent years.
Holders of Postgraduate Degree in Engineering/ Technology	Rs. 2400/- p.m. for the first two years & Rs. 2500/- p.m. for the subsequent years.

Fellowships are tenable for an initial period of two years in the first instance and are likely to be extended as required.

Candidates called for interview will be paid Second Class to and fro rail-fare by the shortest route.

How to Apply

Candidates possessing the prescribed qualifications may apply on plain paper giving the followin details along with a recent passport size photograph: (1) Name (2) Father's name (3) Address for communication (4) Details concerning University/Institute attended (5) Examination results indicating class marks grades in individual subjects (6) GATE score: Year/Month (7) UGC/CSIR qualifying examination passed Date of examination—valid upto (8) Date of birth (9) Place of birth (10) Mother tongue (11) Nationalit (12) Whether SC/ST (13) Professional experience (14) Signature and date.

Applications should be sent to the Deputy Registrar (Academic), Indian Institute of Technology Madras-600036 enclosing a Demand Draft for Rs. 15/- in favour of Indian Institute of Technology, Madra payable at Madras and a self-addressed unstamped envelope of size 30 × 18 cm superscribing the envelop "Application for National Superconductivity Fellowship".

[illegible] receipt of completed applications is **15th December, 1988.**

No. F. Acd./ARU/R 3/05/88-

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

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EDUCATION AND PEACE

Narindar Singh*

We should hear, if we were listening,
the mutter of the approaching storm.

—**Barbara Ward**

Introduction

Albert Einstein once made a sharp distinction between the animal part and the thinking part of human nature and described the two respectively as 'our foe' and 'our friend'. Being but parts of human *nature*, the 'foe' and the 'friend' of mankind must always have lived together. Indeed, even within an individual psyche, the good could subdue the evil for a given duration of time and be subdued by it for another. That was the point which R.L. Stevenson, for instance, made so effectively through his story about *The Strange Case of Dr. Jekyll and Mr. Hyde.*

But what we are here concerned with is an entirely different problem; and it lies in 'our foe' having more or less completely *overwhelmed* 'our friend' with the result that we cannot even take the existence of our species for granted any more. As Bertrand Russell once put it, 'we are in the middle of a race between human skill as to means and human folly as to ends'. Further, we have managed to survive so far 'owing to ignorance and incompetence' and may *not* expect to do so much longer. For, 'given knowledge and competence combined with folly, there can be no certainty of survival'. This means that 'unless men increase in wisdom as much as knowledge, increase of knowledge will be increase of sorrow'.[1]

The increase of sorrow which Russell warned us against with the vision of a prophet nearly forty years ago has continued to accelerate ever since. Besides, and reverting to Einstein's terminology, the very fact that of late we have been living with the threat of total extinction as a species shows, if anything, that at least in the relatively recent times the cultivation of the animal part has received much greater *organized* attention through, say, the universities than the cultivation of the thinking part.

A profound irony is involved here. For it is the work done at some of the most prestigious places of higher learning which has culminated in the development and fabrication of vast masses of omnicides and which in turn have made the termination of human history a very distinct *technical possibility*. For this reason alone, this termination can now take place any time. Indeed, as Noam Chomsky has written, it is a miracle that it has not already taken place. This means that it is not an imaginary or a distant threat but one which is very real and immediate. But this means, in turn, that threatened with termination that it is, human history may not longer be taken to be 'a race between education and catastrophe'. Rather, it may be seen to be a process which has now been distorted by a catastrophic misuse of education itself.

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* *Professor of Economics, Zakir Husain Centre, Jawaharlal Nehru University, New Delhi-110 067.*

This being so, education may well be seen as a process whose essential aims and objectives such as humanization have been lost sight of. In order, therefore, to dispel the prevailing threat to our existence and thus to work for the restoration of human history, we can have no option but to make what Einstein called the thinking part of our nature come on top and to ensure, in Bertrand Russell's terms, the ascendancy of wisdom over mere knowledge.

This entails a renewed focus on the formulation of the basic concern of education. I submit that in the unexceedably grim context of the prevailing situation, there can be little more justifiable as an objective of education than the generation and propagation of a peace-oriented culture.

Indeed, a formal recognition of the paramount need for precisely such a 'pacification' of education has long been available in the very famous opening words of the Preamble to the Constitution of an *educational*, scientific and cultural oraganization called the UNESCO : 'since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed'. Evidently, it is through the process of education *alone* that we can locate the construction of the defences of peace in the *minds* of men. Little wonder that the acronym called 'UNESCO' contains an 'E' which stands for 'Educational',

But although people have been repeating the UNESCO affirmation about the defences of peace ever since it was first formalized some forty years ago, it still continues in effect to be no more than a pious sentiment. I am persuaded, therefore, that in oder to be able to give it substance, we would do well to rethink the very meaning of education and that of peace as well.

Two Kinds of Consciousness

For one reason or other, not many people take sufficient care to define 'education' itself precisely enough and most in fact leave it as a more or less undefined or perhaps even, undefineable nine-letter word. Little wonder that 'education' remains a grossly misusable abstraction. Thus, instead of asking for more of sanity through a conscientizing education which alone could have prevented a mad rush towards oblivion after the Sputnik, even the American literati could ask only for ever more of education of the undefined variety.

Involved here was a naive and uncritical presumption to the effect that more of education would produce ever more of such sophisticated tethnology as alone could ensure continued American military pre-eminence in the world. Also naive and uncritical was an associated or rather a prior presumption to the effect that the military equipment expected to be produced as a result of 'more of education' could only spell American military pre-eminence and not *global* disaster. Which of course would mean an American disaster, too, either through a sudden holocaust or through a relatively slow attrition of the material base itself which a relentless diversion of resources towards the production of baroque and militarily useless weapons systems would cause.

The essential trouble here may well not be with education as such, even if undefined, but the mass consciousness or rather, as Paulo Freire would say, with massified consciousness. This is the **kind** of consciousness for the fabrication of which ruling circles, everywhere have available a truly vast and expanding 'armamentarium' of newspapers, glossy magazines, TV, radio and so on.

If education is not even designed to resist the media onslaught; if in other words, it is not even meant intensely and consistently to question and to examine the prevailing order : mass consciousness must perforce become 'falser and falser'. This is to say, it must necessarily get overwhelmed by the increasingly spectacular but essentially and ultimately self-defeating performance of the contemporary military-industrial civilization. Moreover, while the spectacles become ever more spectacular, the capacity of mass or collective consciousness to comprehend and to meet the mounting gravity of the prevailing situation decreases. But the decreasing power of collective consciousness to grasp the grim meaning of the existential reality today can only signify the increasing naivete of what Paulo Freire calls naive consciousness. Which, in turn, cannot, but signify our increasing vulnerability to and defencelessness as a species against the hazards of contemporary military—industrialism. In particular, because technological sophistication *per se* continues to appear to most people as evidence of unending progress while, in fact, it may well be eating away the material basis of our existence itself.

Technological hybris and overreaching are but two sides of the same coin and both have long been associated with self-destruction. The Greek legend of Icarus, for instance was intended to make precisely this point. Deadalus, Icarus's father and a highly skilled craftsman, made wings for them both so that they could escape from the labyrinth of Crete. But the wings were attached to their bodies by wax ; and heedless of his father's advice to the contrary, Icarus flew higher and higher and got too close to the Sun. The wax melted, and he fell into the Aegean Sea.

The 'wax' in the legend suggests that technology, particularly, if it happens to be very daring, must have some crucial weakness or other. Evidently, the destruction of Icarus can be explained in term of his refusal to recognize the inherent limits of technology. This is the essential bane of naive consciousness which can see nothing below the surface or anything other than illusions in the future. It follows, therefore, that if education too is in effect designed to promote and to cultivate nothing more than naive consciousness, it can well promote the disruption of the very conditions of human existence. What I have been saying above argues that this precisely is what it has been doing.

In the circumstances, education ought to mean, if indeed it is to mean anything at all, a process which engenders 'critical consciousness'. We owe this concept to Paulo Freire who distinguishes it sharply from 'naive consciousness'[2] another concept of his which we have been talking about a little earlier. As he insists, it is critical consciousness *alone* which can enable us to perceive and then to meet the challenges of our time. In contrast, naive consciousness being by definition uncritical, does not even permit us to perceive, much less to meet and to over whelm those challenges.

Authentic education alone can help us dispel the naivete of collective consciousness which the powers that be manage somehow to produce. This means that to be authentic, education would have no option but to become a radical critique of the prevailing order. But this also means that it would do well to take care to be informed by a properly and self-consciously holistic perspective. For that alone can enable it to go to the very roots of the situation so that it can become a radical exercise in the literal sense of the term. But to be articulated, a holistic perspective has to take everything that can be shown to be significant into account.

Nevertheless, from a strictly educational point of view, the trouble is well worth taking. For a holistic perspective alone can make our intellection critical. Indeed, in Paulo Freire's formulation, no intellectual exercise can have any educational value *unless* it is critical and it cannot be *critical* unless it is holistic. In his own words : 'The investigation will be most educational when it is most critical, and most critical when it avoids the narrow outlines of partial or "focalized" views of reality, and sticks to the comprehension of total reality'.[3]

Put in this context, virtually the whole of what passes for education today, and in particular what passes for higher education, is quite evidently a-educational if not simply counter-educational. For it is characterized by a proliferation of specializations and even sub-specializations. Which cannot but entail a continuing fragmentation of the very process of intellection particularly when the Whole is kept out of account. Routine reminders about what is known as multi-disciplinary research are of no avail. In any case, what is needed for doing work of a non-spuriously educational significance is a concern with facts and interconnections the *criticality* of which can be established in open dialogue. This means that what we need is a concern with fundamental issues, not a fusion of different disciplines, each of which has otherwise been concerned with its own trivialities. For the sum of trivialities, no matter how numerous, can only be a triviality not profundity.

It is this impasse which Holism helps us avoid. For what it demands is not a multi-disciplinary concern with a problem which in itself may be a non-issue. What it demands instead is a concern with a problem which is itself of fundamental and existential importance ; and therefore it also demands an examination of all facts and relations which can be shown to be of relevance to it. Therefore, Holism inevitably requires one to dismiss as impertinent the traditional boundaries which have been erected to mark off one discipline from the rest. It is only natural that not many may find it easy or even possible to practise Holism thus conceived. For, in the first place, it is not all that simple to transcend the boundaries of the discipline one has been trained in. And in the second, if having transcended them, one escapes being dismissed as a dilettante, one certainly runs the risk of running into a professional cul-de-sac. The powers that be find it a lot easier to recognize the merits of a narrow specialist who has successfully internalized the values and mores of the prevailing order than to promote a holist who cannot but be an ineveterate critic of that order.

But not unoften, it is plain intellectual inertia which may prevent one from taking one's own holistic agenda to its logical limit. I find it ironical in the extreme that it is none other than Paulo Freire himself who in failing to be sufficiently critical of modern technology as such fails also to focus his holistic beam on the most crucial and even defining feature of the contemporary world. And yet it is he who has taken such care to justify Holism in terms of its power to generate Criticality. Which in turn happens to be the staple diet which education must thrive on. As I see it, then, Paulo Freire cannot on the one hand reject the legitimacy of the *status quo* and on the other let pass unquestioned the legitimacy of the *modus quo*. Nevertheless, he himself told me once that he does not reject modern technology as such. But, then, what he fails to see is nothing less than the umbilical cord which joins the prevailing order of power with modern, or rather hyper technology. But in failing to take note of this simple and yet vital connection, he manages to be much less critical of the prevailing order than he ought to be.

The Imperative of Non-Conformity

It is easy to see that from a strictly *educational* point of view, it is of the very utmost importance to *continue* to cultivate consciousness of the critical kind. For that is the only way one can face the facts, as Copernicus would have said, 'with eyes open'. This means that one should always be willing and prepared to make room at the conceptual level for some previously unperceived dimension of reality or other.

For this is the only way to avoid what William James would have called 'a bloomin' buzzin' confusion' which comes often to bedevil the world of thought. In order therefore to minimize or even to eliminate altogether the intellectually devastating hazards of all kinds of dogmatism, we would do well to cultivate a conceptual framework so robust that it can deal with any existential novelty, no matter how unruly and wild. In order to ensure this, we would do well to re-examine our conceptual framework the moment we find that some novelty fundamental and prepotent enough to have transformed the very terms of existence is already there.

Indeed, no framework can be critical and educational enough, and must actually be counter-educational, if it happens to be averse to re-examination. This means that in order to *see* things as they *are*, to avoid massification and to convert education itself, as Bertrand Russell might have said, into 'a leaven of change', we need a conceptual framework which is so critical as to be critical of itself as well. This itself has a profound existential role to play. For this is absolutely the only way to defy the sentence of death which the powers that be happen to have passed against the human race. It is thus that an unrelenting profession of non-conformity, which means an inexorable cultivation of a culture of Dissent, can be seen to be the only way that we can hope to be able to dispel the exceedingly grim crisis of our times.

We seem to be very much in need of what Thomas Kuhn would call a 'revolutionary reform' of our perceptions. A brief reference to a similar reform initiated for example by Nicolaus Copernicus over four hundred and forty years ago would therefore be in order. In telling 'the Sun to stop and the Earth to go round', he *began* a process which would culminate later in a major paradigm shift. But while the replacement of the geocentric by the heliocentric astronomy has received all the attention, the concomitant replacement of the organic and holistic world-view by the mechanistic and reductionist one has suffered a major neglect. Copernicus, to be sure, did not abandon the organic paradigm as the following passage from his *Revolutions of the Celestial Spheres* will show: 'Meanwhile, the Earth conceives by the Sun and becomes pregnant with annual offspring'. As far as I am concerned, what matters here is not the treatment of the Earth as a female and of the Sun as a male. For, to me, a lot more important is the recognition that not only does the Earth revolve around the Sun but also that the Earth is a planet which is alive and further that the only source of all life on the Earth is the Sun. It was only later that men like Galileo, Descartes and Newton finally destroyed the organic world-view and replaced it by one which treated the whole universe as but a machine: 'The notion of an organic, living, and spiritual universe was replaced by that of the world as a machine, and the world machine became the dominant metaphor of the modern era'.[4] Far from being challenged, an unabashed scientism began to flourish in the form of reductionism. For a machine—any machine could be *reduced* to its constituent parts while an organic Whole could not be.

Mechanistic reductionism was carried to its extreme limits by Rene Descartes with whom man himself became a machine. In his own words: 'I do not recognize any difference between the machines made by craftsmen and various bodies that nature alone composes... I consider the human body as a machine... My thought... compares a sick man and an ill-made clock with my idea of a healthy man and a well-made clock'.[5]

Little wonder that as far as he was concerned, 'there is nothing included in the concept of body that belongs to the mind; and nothing in that of mind that belongs to the body'. This means that to him even the human body was a material structure which had nothing to be distinguished from, say, a clock. The mind, of course, was something different altogther.

This kind of division between mind and matter, which is also known as the Cartesian Partition, suggests that we are only isolated egos 'contained' within our bodies. In the historical context of geographical discoveries and accelerating trade and commerce, this replacement of human beings by fragmented and mechanistically oriented egos would in due course become a recipe, in Gregory Bateson's words, for 'greed, monstrous over-growth, war, tyranny and pollution'.[6]

The point of it all is that the kind of paradigm shift which Copernicus began and which, building on the work of Galileo, Descartes and others, Isaac Newton completed was revolutionary in one sense and counter-revolutionary in another. Revolutionary, because it brought about the replacement of an obscurantist and counter-factual astronomy by one which is illumining and factual. Counter-revolutionary, because it brought about the replacement of a life-preserving, organic and holistic world view by a life-disrupting, mechanistic and reductionist dogma. It may be ironical but is nevertheless true that geocentric astronomy, obscurantist that it was, still did not threaten our race with extinction. In contrast, the reductionist dogma, scientistic though it may be, is now known to have put us in a situation where we cannot even take our continuation as a species for granted. Shall we say, therefore, that the Copernican Revolution brought about the replacement of an obscurantism which was fairly safe by one which is dangerous in the extreme?

In the circumstances, we may continue to define science as a problem-solving activity all right, but still specify the kinds of problems that it may seek to solve and those that it may *not*. For we would do well not to forget what the French physiologist, Claude Bernard said over a hundred years ago : 'True science teaches us to doubt and in ignorance to refrain'. It follows that if not in ignorance but in full awareness of the potentially catastrophic consequences of their success, people continue not to refrain from but instead to persist with a variety of pursuits, they may not be taken to be doing true or normal science but only some grotesque distortion of it. Symbolizing this kind of anti-science is the 'solution' worked out by Stanislaw Ulam and Edward Teller which led to the fabrication of the hydrogen bomb in the early fifties. 'Research' being done these days for the development of battle stations in space is even a more expensive version of anti-science. Being far more destructive of resources, it is exceedingly more dangerous as well. Pierre Curie's warning that 'in criminal hands radium might prove very dangerous' comes to mind. Little could he have anticipated the kind of predicament we face. For the mere possession of vast quantities of lethal hardware, which we may just call 'radium', has made the hands so criminal and the psyches so brutal that they are impelled to acquire ever more of it.

It should be evident by now that what the contemporary civilization, disfigured as it is by anti-science, produces is not 'biophily' or the love of the life but its exact opposite, 'necrophily' or the love of death. If, then, education is to play its proper role as an ontological vocation of man, which Paulo Freire says it must, we would have no option but to say NO to the military-industrial scientism of our times. To help them utter this 'no' as emphatically as possible, the scientists themselves would do well to combine problem-solving with 'problematizing'. Which, in Freire's conception is an attempt to perceive the totality in order to be able to figure out what exactly is the issue of central concern. Indeed, once problem-solving gets situated within problematizing, it ceases altogether to be a technocratic undertaking so that the scientist in question can decide what kind of problem-solving ought to be attempted and what ought not to be. An ability to make this distinction ought to be, I submit, the very quintessence of what is called the scientific temper.

But the moment the scientist, having become critically conscious, decides that there in fact is a set of problems which science ought *not* to try to solve, he becomes a non-conformist as well. Besides, if we remember that solutions to these problems in the precise context of our time spell our possible destruction as a race, we begin to see non-conformity as a basic condition of life. But since hyper-technology *happens* to be the way that anti-science's solutions manifest themselves, non-conformity thus understood cannot but signify a rejection of a great deal of modern technology too. Even so, what I *am* pleading for is not some kind of a technophobia. Rather, what I *am* pleading for is a sufficiency of Discrimination which would permit us to distinguish between what Ivan Illich once called convivial technology on the one hand and what is nothing but a technology of disruption on the other. This is a distinction of the very utmost importance.

For while the former permits us to create and to sustain relations of amiability among men and also between men and Nature, the latter is a source of a double disruption: the disruption of the bonds among men and of the bonds between men and Nature, too. This kind of compounded disruption we can hardly afford.

Power, Violence and Peace

But such are the compulsions of the pyramids of political and economic power now dominant the world over and in particular of the superpower establishments that this kind of disruption continues to intensify. This can only be an explosive situation. In fact, already in 1947, Robert Oppenheimer himself made the point that 'the world is moving in the direction of hell with a high velocity, a positive acceleration and probably a positive rate of change of acceleration'.[7]

Therefore, in the prevailing context of the overriding reality of the nuclear overkills of today, the minimum that ought to be evident is that there can be no such thing as a nuclear peace, that is, peace in the shadow of the nuclear kill-alls; not even in the short run. This is easy to see. Being vehicles of indiscriminate and vast destruction, nuclear missile systems cannot even be fired to achieve any specific and specifiable *military* objective. They may only get fired by accident. Indeed, it is intriguing that such an accident has not taken place so far; more so because ever more of these missiles continue to be acquired all the time. But the fact, for example, that in the United States alone over five thousand men are removed from missile duty *every year* for drug, alcohol and other psychological problems suggests that the threat of a nuclear holocaust by accident is frightfully real. So real, indeed, that all the ingenious precautions which the superpower military establishments continue to devise in this connection can offer us but little comfort. The remedy, therefore, lies not in taking even more elaborate precautions but in dismantling these vehicles of destruction. Indeed, each one of them carries the signature of Satan himself on its nose cone; and it would do us immense good to try to design a missile-free world. In any case, it hardly seems to make any sense first to *create* a situation in which an accident, if it takes place, can only be catastrophic and then to try to see that such an accident does not actually take place. In the circumstances, an accidental firing of a nuclear missile which will set off a missile chain reaction might turn out to be the *immediate* cause of a nuclear holocaust. But the *essential* cause will still lie in the relentless accumulations of the missile systems themselves. This seems to be the reason why, as C. Wright Mills might have said, the *immediate cause* of the nuclea holocaust will be the *long preparation* for it. There fore, to combine the *preparation* for a catastrophi accident with the *fear* of one is nothing but drasti reduction of reason.

But all this, grim as it is, ought not to make u oblivious of the two other holocausts *which are* already raging in the world and which, if not put out soon enough, could destroy the future of our race *even without a nuclear holocaust ever taking place.* The first of these Johan Galtung would designate as the 'Silent Holocaust' and the other I should like to describe as the 'Umbrella Holocaust'.

The Silent Holocaust manifests itself as follows: (a) in the extremes of human misery and suffering caused directly by a massive and escalating pre-emption of resources by militarism, and (b) in the relentless attrition of the Earth's biosphere caused directly by the rampancy of the petrochemical and nuclear industries. Thus, according to Ruth Sivard, it takes $5,90,000 *a day* to operate *one* modern aircraft carrier; and every day, too, as many as 14000 children die in Africa alone because of hunger and hunger-related diseases.[8] The continuing elimination of entire species of life and a reckless reduction of the Earth's forest cover form part of the Silent Holocaust and will before long have exposed children all over the globe, those of Europe and the Americas not excluded, to a similar fate.

Also awesome is the fury of the Umbrella Holocaust or the holocaust raging under the umbrella of the nuclear omnicides. What is happening may b schematized as follows: Nuclear stockpiles which cannot be expended continue to mount nevertheless. But since what they hold is the promise of a complete holocaust, the powers possessing them can and do use them as a cover or an umbrella under which their 'con ventional weapons' industries also continue to flourish. But since they cannot fire even these weapons at each other and since they cannot continue indefinitely to stockpile them either, they cannot but seek to carry them to third parties most of which also happen to b in the Third World. This lethal transmission can take place in the form of 'military aid' and commercial ex ports or through direct military intervention.

But, then, the establishments of the minipowers which come to acquire these weapons must find ways of expending them also. In particular, because unlik the nuclear stockpiles, they *can* be expended and indeed have to be expended for the 'wheels' of the weapons industry to keep moving. Therefore, it is in being regularly produced and expended that the conventional weapons can take on the 'storage' costs of the nuclear missile systems. Incidentally, funds allocated for the production of nuclear weapons happen to be around a sixth of those allocated for the production of conventional weapons. Still, it is the latter which are actually put to *direct* military use by different national establishments.

Since this has become an integral component of the political culture of oure time, and since the technology of delivering death is becoming ever more lethal and sophisticated, it is only natural that death should be so rampant even during a period of peace which the world is said to have enjoyed since the end of the Second War. Indeed, during the forty years of the 'Cold War', four times as many war-deaths have taken place as during the first four decades of the present century which included a very hot world war as well.

In a situation in which violence has become such a fetish and in which the blowing up of the planet itself has become at least a distinct *technical possibility*, we surely have a right to expect that those in the business of education will assign to peace an overriding priority. It seems, therefore, that our only hope is authentic and pacified education. If we can manage to use it somehow to put out all the holocausts now raging and to dispel the threat of extinction as well, we will have effected the greatest educational miracle of all time; and if we fail altogether, we will not possibly have made the situation in any way more menacing than it now is. Pacified education, in other words, is a perfectly safe bet and indeed the best one. For it may well be through such an education alone that we will be able to change our 'modes of thinking' which, as Einstein said, even the 'unleashed power of the atom' had not been able to blast.

It follows, therefore, that there can be nothing more important, nothing more urgent, that those in the business of education can do today than to put peace at the centre of their *professional* concerns; and conversely, there can be nothing more cynical, nothing more unethical, that they can do today than to continue to behave as if all is for the best in the best of possible worlds. In other words, if they do not put peace at the very centre of their *formal* concerns, they cannot possibly be concerned with education either. Irrespective of the intentions. ☐

NOTES

1. Bertrand Russell, *The Impact of Science on Society* Blackie & Son, Bombay, 1958, p. 157.
2. Paulo Freire, *Education for Critical Consciousness*. The Seabury Press, New York, 1973, p. 34.
3. Paulo Freire, *Pedagogy of the Oppressed*, Penguin Books, Harmondsworth, 1975, p. 80, Emphasis in the original.
4. Fritjof Capra, *The Turning Point*. Fontana, London, 1985, p. 38.
5. Quoted in *Ibid*, p. 47.
6. Gregory Bateson, *Mind and Nature*, Fontana, London, 1980, p. 231
7. Quoted in Edward Thompson, 'Notes on Exterminism, the last Stage of Civilization' *in* Edward Thompson and others, *Exterminism and Cold War*, Verso, London, 1982, p. 27.
8. Ruth Sivard, *World Military and Social Expenditures* 1985 World Priorities, Washington, 1985, p. 5.

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ACADEMIC REFORMS BY 2000 A.D.

Anand P. Srivastva*

The UGC has been attempting examination reforms in our universities right from the late fifties. This important mission was initiated by Dr. Benjamin S. Bloom, a world renowned specialist, who conducted seminars and interviewed university students all over India and reported that "during the year the typical student spends less than an hour a day on study outside of class attendance...students do not see much need for additional study time during the regular year since the major emphasis is on getting notes from the lectures and checking those notes against a standard textbook. The students are also convinced that they will be held for a memorised version of the subject and that the attempt to learn this material too early is wasted since it cannot be retained until examination time." This finding is fairly indicative of the amount of study that is required to be conducted in the institutions of higher learning in our country and the kind of preparation needed for examinations. Our teachers and Vice-Chancellors are aware of these phenomena which have been ascertained and confirmed by all who have studied the facts. We should not forget that the present day teachers and Vice-Chancecellors also studied in this manner in their own generation, not only that, even their own respective teachers had followed the same pattern which is very much part of tradition. It simply means that our higher education will go on even if the worst happens and the university libraries are consigned to nearby rivers. Carl White has also given the same kind of observation about the University of Delhi, "The hard fact to be faced is that the University of Delhi inherited an educational tradition which treated the library as a conventional and useless accessory. Had the library by some misfortune been suddenly dropped into the Jamuna River during the early years, the loss would have been regrettable but I search in vain for any convincing evidence of daily demands by teachers and teaching assignments which would have caused the academic programme, as then conducted, to suffer from the disaster". There is a great deal of understatement, if not also diplomacy, involved in this observation which restricts itself to the past of the university. The fact is that, except a few departments and a very small number of teachers, this observation appears quite true even in the present day teaching, not requiring use of books as in an academic workshop, for we all know that the absorptive pattern of teaching and examinations, as identified by Benjamin S. Bloom in 1961, is still in vogue in Delhi University as in the other universities of India. The story of higher education for about 140 years in India, from 1857 to the 1980 is dominated by the fact that the student is required to be passive in the learning process.

The new philosophy that all learning is an active process between teachers and students has not yet made a start in Indian universities. There is no need of quantitative analysis and statistics to prove this. All modern thinking clearly and loudly endorses that, "Behind the statistics, behind hard won successes and disappointments is the story of two philosophies in conflict. One view holds that all learning is an active, not a passive thing. It is well illustrated by research in which a mature scholar opens up the wide vistas of the subject, familiarises the student with the tools he must use and then give him an apprenticeship in which the intellectual record accumulated in libraries is used to try out and cultivate his powers to do original work. It is illustrated also by the achievements of many teachers who use the lecture method—teachers whose reading habits and tastes are as infectious as a contagion, teachers who layout the conquest of a subject as methodically as an assault on Everest and who (with or without Tutorials and Preceptorials) guide their apprentices in the use of the instruments of learning and use the examining process to test the student's all-round growth. When higher education is conducted along these lines, the library shares with the lecture room the role of academic workshop and is as indispensable to high academic achievement as the heart is to the mammal.

The other view assigns the student a less active, more absorptive role. It holds that the essentials of academic achievement are authoritative lectures, normally supported by a well chosen list of prescribed readings followed with examinations by outsiders who test not the all round growth of powers cultivated by the great makers of men found in every first rate university—but who test rather the degree to which students have absorbed the information contained in lectures and required readings. Assuming that the student follows the lectures closely and can buy the prescribed

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texts, the library, for him, amounts to an external accessory to the learning process—like a badge. If it is a great library, it may be a badge of honour and pride, but it would be unjustifiable to finance such a dispensable accessory by calling it the heart of the university."

As the quality and type of teaching-learning processes is the indicator of the use of libraries and books in higher learning, a librarian need to be permitted to look at the details from his weaker but higher platform. In one of my books I said about a decade ago, "the most inexcusable failure of the Indian professoriate lies in not adopting modern methods of teaching and evaluation. Even 'Teacher's Synopsis' fail to be prepared in our universities, students are put in passive roles in learning, and relevant academic literature is not written and published by our professors... The professoriate has to develop the methodology of making our youth and scholar walk together in 'know-how' and productivity with their counterparts in other countries... But there is no remedy for the greatest of all tragedies i.e. if the university faculty itself becomes indifferent, which unfortunately is the case at present". Our teachers may know about the subject they teach but not the dynamics of a classroom. We have to carry to them knowledge about the techniques for better teaching and better learning methods by cultivating first in them a strong better reading ability and habit obviously through the library. Presently, the model of teaching and learning is such that a teacher tells and students listen about sacred and sacrosanct courses. It was Joseph Tussman, a Philosophy Professor at Berkeley, who doubted in mid 1960s the utility of this, by arguing that students served by different courses are likery to be disserved by all, because :

(1) The student buys with each fraction of this committed time an even smaller fraction of the teacher's interest. Tussman said, "No teacher is in a position to be responsible for, or effectively concerned with, the students' total educational situation. The student represents himself in fragments and not even the advising system can put him together again".

(2) When about four to six, or more, teachers teach a student in an academic term or semester, they all compete for student's limited time through assignments, creating thereby increasing backlog, which a student copes with by inventing some craft. Tussman calls it, "Strategies of studentship." Burden of numerous assignments creates a series of artificial crises in a student's life, where if a student tries pursue one thread he drops the other and thus collection of 'coherent courses' becomes an incohere collection. Tussman concluded that reasons for cha lay not in the perversities of teachers and studen but in the failure to develop proper organisation teaching and learning process in higher education.

The course pattern of dispensing curricula both quantity and quality must be changed in our unive sities by adopting smaller units, two to three at time each for about four to six weeks, to be followe by evaluation and then picking up of newer unit The UGC launched two programmes—COSIP in 197 72 for improving science teaching and COHSSIP i 1974-75 for improving teaching in Humanities an Social Sciences. Objectives were to reduce forma instruction, enhance student participation in learning introduce tutorials and seminars, adopt internal assessment and improve reading habits, etc. About twent years have passed and these two programmes hav been reduced to mere bureaucratic rituals. The UGC report 1985-86 just gives a descriptive account b giving statistical details of their application in colleges, etc., and no qualitative evaluation has been attempted, as will be apparent in the following texts

College Science Improvement Programme (COSIP

The programme initiated by the Commissio in the year 1970-71 aimed at bringing about qualitative improvement in the teaching of science subjects at the undergraduate level. The purpose o the programme is to accelerate the capabilities o undergraduate science students and initiate a process of continuous self renewal. This is brought about through an integrated approach comprising simultaneous improvements in subject matter, methods of instruction, syllabi, curriculum, laboratory exercise, workshop, library and teaching aids.

The grogramme has been taken up at two levels (a) in selected colleges including the entire science faculty and (b) by way of University Leadership Project (ULP) in one science subject in all colleges affiliated to a university. As on 31st March, 1986, COSIP was implemented in 252 colleges and 40 university departments (by way of ULPs.)

College Humanities and Social Science Improvement Programme (COHSSIP)

The objectives of this programme, introduced in 1974-75, are given in the UGC Annual Report for 1984-85. Like COSIP, this programme which is aimed at improving the quality of Humanities and Social Sciences learning is also taken up at two levels, viz., in selected colleges and in university departments by way of University Leadership Project.

Assistance under this programme was provided to 40 Arts and Commerce Colleges and 35 Teacher's Training Colleges during the period under report. The total number of colleges assisted under the programme upto 31st March, 1986 was 401 in the first phase and 74 in the second phase.

The number of university departments participating under this programme remained the same, viz., 10 during 1985-86 as it was during 1984-85. However, during the year, the Panels identified some more departments which could be selected for participation under this programme. These recommendations of the Panels are being examined.

Let brevity be adopted to evaluate this merely descriptive report by saying that such a poor and casual disposal of seminal and metamorphic programmes by a national commission will not be available even in the poorest and the most backward country in the world. The poor quality of analysis by the UGC itself speaks that vital programmes are not progressing properly and the schemes have become just rituals for consuming grants. In these circumstances the UGC will fail to, penetrate the *status quo* of telling and listening type of higher education. The plans of the UGC are worked out ignoring global research findings and are executed casually with the result that the entire, investment goes down the drain and so-called statistical figures are reported as achievement. Let us have a look at the achievements of the UGC on the examination reform which it is attempting since last over thirty years. The report for the year 1985-86 incorporated the following :

Examination Reform

The Commission's programme of Examination Reforms is based on the report, "Examination Reform—A Plan of Action" prepared by a Working Group constituted by the Union Ministry of Education. The report was endorsed by the UGC and thereafter discussed by the appropriate university bodies, so that each university could evolve its own plan of action. The Commission simultaneously sponsored a series of zonal workshops to involve the academic community representing different levels and shades of opinion.

The Commission has laid special emphasis on the implementation of certain specific measures leading to examination reforms with a view to improving the reliability, validity and objectivity of evaluation and with a view to bringing about a closer integration of teaching-learning and to make examinations an educational experience. The main emphasis is on (i) continuous internal evaluation, (ii) development of question banks, (iii) introduction of grading system, and (iv) introduction of semester system.

While the above measures have been suggested as a package plan, it was felt that continuous internal evaluation was the most crucial of these reforms. Accordingly, the Commission constituted a working group to prepare the guidelines on continuous internal evaluation. These have been published and circulated to the universities, with the suggestion that the same be placed before academic bodies and concrete steps be taken for the implementation of the various measures suggested in this document. The Commission has also constituted a working group to prepare a monograph on grading system.

The Commission has constituted an Implementation Committee to advise it on various matters for implementing the examination reform programme. Information collected from the universities/institutions deemed to be universities from time to time regarding progress made by them in implementing the programme of examination reforms is also reviewed by the Implementation Committee.

The Commission is providing support to a few selected universities/institutions deemed to be universities towards core staff and other facilities such as workshops, seminars, printing of question banks, purchase of books and equipment, contingencies, etc., on 100 per cent basis for establishment of Examination Reform Units within an overall ceiling of Rs. 75,000/- per annum besides actual expenditure on core staff. The grants paid to these universities/institutions have enabled them to introduce specific measures of examination reforms and to monitor the programme. At present 10 universities and 3 institutions deemed to be universities are receiving assistance from the Commission towards establishment of Examination Reform Units. Proposals of 16 universities and one institution deemed to be university for financial assistance towards establishment of Examination Reform Units are under consideration.

According to information available with the Commission, continuous internal evaluation at different levels is being carried out in 41 universities, 11 institutions deemed to be universities and 22 agricultural/technological universities. Question banks have been or are being developed in 21 universities, two institutions deemed to be universities and two agricultural universities. Grading system is in operation in 18 universities, 8 institutions deemed to be universities and 19 agricultural/technological universities and the semester system is being followed in 46 universities, 10 institutions deemed to be universities and 15 agricultural/technological universities.

From this report once again we are not able to find out the quality of reforms and the results of battles being fought in our universities. Can we not know how certain countries have transformed their examinations and how they promoted learning over decades to reach the present shape. After all, they were also in the same state about a hundred years ago as India is today. The story and stages of the transformation of their higher education rested on the following concepts :

(1) Instead of about 3 to 4 broad papers and courses a year they worked out about 10 to 15 smaller units and conducted about 2 to 5 at a time, teachers evaluated their students fully and finally after about four to six weeks of learning together largely through assignments, discussion and seminars. Students also had the chance of studying their evaluated works and also commented on the teachers effectivity.

(2) The teachers had the synopsis of their courses which students got on the first meeting and each one regulated his efforts for learning the short courses through classroom, library, books, group discussions and consultations with teachers.

(3) The teacher kept his eyes on the progress and conduct of each student and exchanged his views about students' efforts with other faculty members.

(4) The teacher remained busy in his own research and continued learning, produced books, papers, etc., to form the corpus of growing knowledge. Publ or perish became a style in his life. The libr became the workshop for teachers and student absence of which academic functioning would stop

Have these four features emerged in any of universities as a result of implementing examinat reforms ? If not, what have we been exactly do for over thirty years ? In all these projects of UGC, the student had been the main focus of att tion. All ranks suggested what a student should how he should do it; What Joseph Tussman s about the 'strategies of studentship'. We also larg ignored the continuing educational requirements Vice Chancellors and the faculty. No courses w conducted for updating them and for supplementi the gaps of generalised nature concerning higher ed cation. Any Vice Chancellor and/or a profes would have loved to learn about the concepts li 'group processes', 'problem posing education', 'in vidualisation in learning process', 'value of modula sation, etc., in a seminar given by experts on th areas including foreingers. By placing our empha on what student should do we are chasing a phant and so get poor returns. The right course to foll seems to be the continuing education of Vice Chanc llors and teachers on new strategies and metho If those in authority are properly equipped and u dated, students will automatically get updated. input of new knowledge in teachers and Vice Cha cellors will magnify the returns of the UGC grant The plea stands supported by Suma Chitnis, w describes the state of continued and current schol ship of teachers in her recent study on the Bomb University teachers.

Continued and Current Scholarship

With respect to Continued scholarship evidenced in the respondents' reading habits a their contribution to their fields, the picture even more disappointing. Asked to state wheth they read regularly (the question actually ask was whether they read daily), most of the respo dents (84 per cent) replied that they do not re regularly in order to equip themselves to hand the syllabi they teach. Only 16 per cent me tioned that they read daily; questioned wheth they use their vacations for study towards t courses or syllabi they teach, as many as 91 p cent of the respondents said that they do not.

Asked to state whether they have ever writt any professional articles, papers, textbooks, e other than their Master's or Ph.D. dissertations, a large percentage of the respondents say that they have written nothing (39 per cent). Twenty six per cent claim to have written light journalistic articles or book reviews. Ten per cent mention examination-oriented textbooks. Only 25 per cent say that they have contributed papers to professional meetings, seminars or journals.

The data on the impressions that the respondents hold of each other's scholarship are even more damaging to their image as scholars. Barely 13 per cent of the respondents believe that more than 50 per cent of their colleagues continue to be good scholars after they take up teaching as a career. In fact, as many as 40 per cent believe that less than 50 per cent of their colleagues continue to be scholars. A more specific breakdown of the responses is as follows :

Those who believe that less than 5 per cent are scholars	Those who believe that less than 20 per cent are scholars	Those who believe that between 20 and 50 per cent are scholars	Those who believe that more than 50 per cent are scholars	Total
40% (69)	36% (61)	11% (18)	13% (23)	100% (171)

What is happening with the teachers of the Bombay University is not a rare phenomenon. It is prevalent all over the country. For a characteristic so common and universal, research studies are not required to prove the point. Yet let us consider what A. Jha reports in his survey results on reading habits of the teaching faculty members of the prestigious University of Delhi. Jha reports that "reading seems to be a rare hobby and that nine out of every ten teachers confessed that they read nothing except the textbooks". Can someone invent ways and means to make students read and learn extensively, if Vice Chancellors and teachers themselves do not read, or are not required to read and continue to learn ? Such ways and means do exist in the Indian higher education through examinations and the end of a year for which students have to do some reading but more of memorisation. The misfortune is that the ablest of this species becomes a university teacher and a Vice Chancellor in the system in due course.

If students are doing what Benjamin S. Bloom has reported and teachers are doing what Suma Chitnis and Jha have found out in their research, where is the need for using books and libraries ? Yet it is the libraries and librarians, devoted to some real innovation in the teaching-learning processes, who can transform the poor quality of higher education into something better. It is not merely the librarian in me who suggests this, or a librarian's philosophy alone; this is the story of Western scholarship where libraries have really made a unique place for themselves in the teaching-learning process and have thereby transformed higher education.

Why are we continuously failing in achieving goals in respect of examination reform and improvement in teaching-learning processes ? Is it because instead of attacking and handling the whole we are tackling just the one or a few parts of complex phenomena ? What could be the whole in this sector ? Could it be something like the following series :

(1) Cultivation of proper learning skills, on which reading habit depends, when students enter our universities and colleges. It was a good opportunity to introduce "synergy" courses in our colleges when the 10+2+3 pattern provided 1/3 extra time to universities and colleges, i.e., the plus three sector by shunting down to secondary stage (i.e. plus Two) one third portion of the syllabi of the earlier three years programme for bechelor's degree. A little arithmetic will show that in late seventties we added to our university and college life two additional long years of much hated spurious telling—listening type of teaching—one by plus action at the top in the shape of M. Phil courses; and another by minus action of shunting down one third part of the bachelor's degree university courses to the second year of +2 at the secondary school. How have we utilised these additional two years ? It is a contradiction that we introduced a paper on 'Research Methodology' in M. Phil which means that our students earn bachelor's and master's degrees without knowing the methods, ways, lanes and tracks of self-academic searching on academic assignments. If we look at the European and North American scene we find that these skills are cultivated at school level and grow qualitatively at college by doing assignments, tutorials, seminars and writing of papers, etc. Research method is not a new variety altogether so as to crop up at post-Master's level. It must have rolls below. Our Vice Chancellors, professors and peers in the UGC fail to realise the obvious and general feature that teaching and preparations for the first

degree should escort a student to the frontiers of knowledge and to the threshold of the world of research and the second degree, should be able to plunge a student actually into research work for life. Our students feel frustrated by the dominance of repetition, at various stages, of the same elements of curriculum, the boring teaching and their passive state in a degree earning game.

Even now, we can start 'Emergency wards' in our colleges and universities devoting about six months in cultivating learning skills in our new entrants through synergy like programmes and help them to develop—college learning study methods, reading skills, writing skills, thinking skills, discussion skills, teamwork skills, etc.

(2) Courses for teachers on Teaching-Learning Processes. In the history of mankind it has taken several centuries to shift the focus on pedagogy from teaching to learning. This process of change is nearly complete in many countries. With us, what to say about adopting of 'learning processes' even the discarded process of teaching (in true sense) is absent at college and university level. Only the anuual examination-spirit is omnipresent. Over decades the making of a faculty member has been faulty in our country. The teacher-in-making becomes highly specialised in his Master's and Ph.D. studies and at the most develops ability to contribute only to 'specialised knowledge'. His total culture is within a narrow scope. He acquires no knowledge to make and develop a full man out of an adolescent. This incomplete academician is generally inclined to withdraw from broad academic and social programmes and activities. He in turn only endeavours to produce 'micro' specialists and the cycle goes on. The UGC has recently established some fifty academies in the country to help our college and university teachers to grow as full academicians. Let us hope the following concepts will be included in their curricula and deliberations :

(i) Explicit Teaching-Learning Processes,

(ii) Thinking while learning and 'clinical evaluation',

(iii) Difference between "Topics to Teach" and "Topics to Teach with",

(iv) Techniques of Tutorials and Teacher-Pupil interaction, and

(v) Skills for Communication, investigation, human relations and information management.

It is through grooming of teachers on these areas which alone can provide for internalised changes in higher education; otherwise we will continue with our matinee-shows of structural changes through 10+2+3 grades, in place of numbers and semester system in place of teams, etc. Monitoring of this scheme through objective inputs, may be through engaging a foreign specialist for two to three years, will pay better dividends, or else it is likely to become one more ritual. The Ministry of Human Resource Development should play a collaborating role with the UGC in the implementation of this project because keeping in view its earlier records, the UGC is likely to fumble here too.

(3) Formation of Short Courses

The academic councils of all the universities be requested to develop about 15 short courses under each department and each should be finally dispensed in about four to six-weeks. We can acquire models from foreign universities and adapt them according to our requirements. Study of models will help us to develop the know-how and the much needed confidence. Foreign Educational Foundations and local IITs may also be requested to help us in this respect.

(4) Granting the Teacher his Natural Right to Evaluate

No society can really afford to distrust its teachers. This is also against the ancient Indian tradition which we value so much and often too much. As various Public Service Commissions conduct their own examinations and the private sector knows well how to identify talents, there will be no major harm if a little dishonesty and favouritism in testing show up their heads here and there. There human weaknesses may be present even under the present system; after all external examiners are not really unidentifiable. We should believe that bestowing of responsibility does bring with it some discipline. Then, there are fairly foolproof ways of coordination and checking by the staff councils, faculty structure and the university as a whole. We can also use the examination branch to work as inspectors in certain categories of foul evaluation. Lastly, opening of evaluation results for study by students will gradually standardise all details. We have to launch it immediately and be ready to regulate all the problems that may crop up from time to time. Now or never should be the style of launching it for the sake of the survival and the quality of higher education as the pattern of evaluation by the teacher concerned is going on successfully in numerous countries.

This pattern has to emerge in India like the goddess 'Athena' appearing full-grown. There may be no half-way or mixed approach formula available for uprooting an evil which is perpetuating since last about 150 years. It has to be stopped like the practice of 'Sati' at one stroke. Momentum can be acquired in this plan, as is the common practice in modern times, if the Prime Minister as a follow up action on the Education Policy, 1986 and on the briefing of the Minister of Human Resource Development and the Secretary of the Ministry, addresses the assembly of Vice-Chancellors, in a mood of and approach for obtaining quick results. Could a bit of the posture of anger help in this case, needs also to be examided. In any case about thirty years of lingering, input by so many commissions and committees, formulations of numerous 'Policy statements', expenditure of billions of rupees and what not, have so far given very poor results. Sir Eric Ashby says that so many high level infections (and life-saving drugs) have failed to make Indian higher education to stand up. Numerous friendly and sympathetic international experts have withdrawn from the educational scene of India due to a feeling of frustration which is worst of all disappointments.

The most important suggestion that should be offered in this analysis is that we adopt the style of going the wholehog covering—cultivation of learning skills, formation of curriculum in smaller units, adopting modern teaching-learning processes, periodic evaluation by teachers giving courses in units and continuing education requirements of the Vice Chancellors and teachers. If we don't go the wholehog and continue to handle separately improvement of science teaching, teaching in the social sciences and the humanities, examination reforms, etc., we are not likely to achieve our goals, in what to say of 20 to 30 years already spent, even if we spend a hundred years. Also, attacking the examinations alone is theoretically not feasible, because it is the fag end of the earlier process and is totally dependent on the details of the earlier processes. How can any resultant factor be modified or changed without modifying or changing the resulting factors which provide the synthesised form of the resultant factor as the end product ? Has the UGC been unware of this fundamental logic ? How long the nation could remain ignorant of it ?

Fortunately, about fifty Teachers' Academies are now existing in the country for the basic and continuing education of university and college teachers and how wonderful it shall be if a few programmes are also organised for the Directors of these academies and the Vice-Chancellors. The full and proper know-how should be made available to these academies otherwise the bad currency is likely to capture them and will convert the affairs into showful inaugurations and valedictory functions bridged by spurious talks by the familiar speakers and by some mid-day sleep for the participants. The relevant information may not get disseminated and quantitative reporting as usual will take place in the UGC documents.

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Communication and Higher Education

An Interface for Rural Development

K. K. Bajaj*

Indian society continues to face numerous challen-es and dilemmas in its process of rural development. Vhile education is an agent of change, its role in eveloping and underdeveloped countries has been ignificant. As an important input, the content of ducation determines not only the accelerating pace f change but also the level of social awakening and ransformation. In infusing confidence essential for uilding a dynamic and cohesive community, it plays decisive role. Ordinarily, education is a process of cquiring knowledge by formal instruction, training, earning and understanding. In its vital application it has to be the preparation for life. It means training of mind and character besides improvement of mental equipment. It is, therefore, imperative to look at the nature and concern of education in its role in development. Through cultivation of ideas, attitudes, values and capabilities, both towards knowledge and skill, it provides strength to people to create a new social environment to enable them to contribute towards development. Development of human resource is, therefore, the main function of education.

Development in itself continues to be a very illusive concept connected with various social and economic variables. It is no longer being conceived merely in terms of economic growth but is regarded as communitarian process where the individual is respected and where the value of cooperative efforts is appreciated. Social justice is as important as economic development. Therefore, development takes care of all-round process touching social, political, cultural and spiritual aspects of the person and the community. Development, in short, means social improvement and better appreciation of human values. In a technical sense, it refers to qualitative and structural changes in the set up of national economy. For a conceptual and comprehensive study of development, it is necessary to compare it with growth which only refers to quantitative and tangible increase in Gross National Product (GNP). Growth may take place due to spurt in economy following rich harvest after timely rains, changes in our internal market price behaviour and many other contributory economic factors. Development, however, refers to a relatively stable long range in real income that is accompanied by change in attitude through institutional set up, production techniques, outlook, etc. Development in another sense means either the optimum utilization of available resources or their enrichment. In this context, human resource occupies the most important place.

Higher education in its content, quality and functional role is the serious concern of any forward looking educationist, social anthropologist, planner or rural economist. It is the common factor which underlies development. Though there may not be any democracy in the domain of intellect yet a democratic approach has to be there in attempting how best education can be used as an instrument of manpower planning in a fundamental sense. It has to attempt the establishment of a social order, that is based on equal opportunity, peace, amity and understanding. The preamble of higher education has to be the fulfilment of social aspirations through a coordinated understanding of human values and proper utilization of national resources. It is in this context that education has to act as a catalytic agent of change.

With the population and information explosion, especially in the developing countries, the role of effective communication tools and technology can be seen to have taken over a large part of educational workload. It is undeniable that learning is acquired through viable communication channels. While education strategies have to deal with inequality and the disadvantaged in a society, the deprived sections of society and the children of the working classes, the nouveau riche and the rural poor, the motivation to learn, so that the learning contributes to development, is the direct function of effective means of communication. Effective communication strategies enhance the reach of education and enrich its quality vis-a-vis dynamics of expansion, social change and our requirements. Education today is not merely confined to the portals of institutions of higher learning. With Open Universities and non-formal systems of education, it is now being brought closer to every person. It is constantly experimental and innovative in its application and approach so as to

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make up the information deficit in society particularly in developing countries which are being seriously challenged by the possibilities of new technology.

Communication Strategies

Benefits of education have started reaching the remotest corners. To make this exercise more relevant, communication planning has assumed importance. At the international level communication has overtones and connotations akin to gamesmanship indoctrination, information overloads, strains and at times creation of distorted images. Communication is even correlated to culture, social requirements and constraints. However, in a society where education is the means for rural development, communication has a different significance. In an age of technology and innovation where education is extending its reach through experimental and psychological means, communication has to have a definite strategy which should neither be the classroom approach of the use of television or radio nor of any questionable ineffectiveness in the field. Communication strategies can comprise a package of radio and television programmes with full informational support, posters and graphics with easy and sharp social messages, cinema scripts of communicative nature, agricultural extension programmes devised to tickle the sensibility of ignorant farmers so as to motivate them into adopting new tools and technology of agriculture, textbooks to arouse interest in learning, and traditional entertainment to sensitise the village folk. Even adult literacy programmes and kits have to contain certain such functional literacy packages as could sustain the interest of rural folk. Radio and television agricultural programmes have to arouse greater interest and awareness towards soil behaviour and technical knowhow. In the economic packages of these programmes, small savings, family planning, afforestation, etc., have to be emphasised. The people have to be educated about the preservation of environment, wildlife and family health.

In a country like India with an illusive cultural mapping means of communication have to be correlated to area specific needs and community consciousness in the rural context. The mass media programmes with an entertainment thrust and commercial overtones are not even accidentally beneficial. In fact, such programmes further disadvantage the disadvantaged. Such programmes may even hurt the sensibility of our backward people. While mass media can adversely influence the creativity of children, the visual and aural effects of television can be utilized to impart better education to our youth in our villages to exploit the rural potentialities for overall development.

India is a land of villages with a rich rural potential and landscape. There are 5.76 lakh villages and 93.3% of the inhabited land has a rural base with the average population of a village as 910. We have an agrarian economy in terms of which the development of the country is measured. Ignorant and uneducated people, though possessed of material gains and power necessary for production of wealth account for development. Their backwardness and poverty of approach continue to be correlated to lack of education and ineffective communication system to realise their potential and channelise their faculties. The development of mental attitudes which is accomplished by positive role of education, suffers on account of nonavailability of proper packages of information beneficial to them. It is perhaps for this reason that the well known economist Marshall has emphasised a full and systematic construction of noneconomic variable called education in economic development. Development is a part of life process even though it depends upon a number of factors which influence it in different ways and degrees. Sometimes rural development is simply construed to mean agricultural development in its complements such as land, labour, loans, seeds, fertilizers, irrigation, power, marketing strategies, etc. Even if it be so, education with proper communication tools brings about the agricultural revolution which is a part of rural reconstruction. These components bring about the social transformation which accounts for development.

In looking to future, it is the capacity to learn new techniques and then to translate them into action, that will determine, perhaps, more than anything else, or any other single factor of production, the viability, autonomy, integrity and development of the country. The constraints of population, the spurt of developmental changes in life style, cultural and value changes, have all to be understood in correlation to our rural setup. While rural schooling may first attract the attention of a responsible government through formal education and through elementary schools, secondary schools and other institutions of higher learning may include efforts of the formal students to learn through these agencies. Education would embrace all activities that supplement the level of comprehension at all levels and in all groups. This may include education at home and all other forms of education. The impact of higher education becomes significant in the context of such variables as socioeconomic background of our rural masses, demographic composition, child labour, agricultural implements, credit requirements of labourers and farmers, parents' perception and of course, the much required awareness of its use.

enefits of Education

With the ever increasing emphasis on economic enefits of education, we have also to be conscious of s materialistic overtones. The institutions of higher earning have to beam their programmes in the irection of creating human capacity, more distinctly n the agrarian setup which can be identified, for a ore confident preparation to accept the future hallenge. This may not be qualitatively identifiable nd tangible, yet the impact of education on life style f the people would give sufficient evidence on its aving reached the people. Education has its impact, vhether good or bad on the rural people, because hey start from the start of civilisation in many ways This brings them information with which their mental orizon changes, political awareness improves, and he status quo undergoes change. In the underdeveloped and developing countries the flow of information through education is transforming the entire approach of the mass of humanity towards understanding the basics of life. A new awareness towards health, values of life, socio-economic compulsions, and will to preserve cultural heritage emerges. While education may cultivate the art of innovation and invent new strategies of existence, yet it would add a new dimension to the cultural ethos of society to survive.

Becoming subject-specific, Indian society with a rural base is known to have been wedded to appaling poverty. In retrospect, it has meant exploitation, ignorance, remoteness, illiteracy, ill-health, agricultural backwardness, and inaccessibility. It means ill-schooling and ill-advised and obsolete methods of farming. In other words, shackles of poverty have contributed to the complexities of our rural backwardness and made the progress difficult and daunting. The gap between the 'haves' and 'havenots' has grown enough. The sole endeavour of education is aimed at bridging this gap. This means the augmentation of the capacity of our people in our villages for greater participation in the national mainstream. In this endeavour education seems to be merely an attempt to hit the moving targets. But nonetheless education has its leavening role in bringing about social transformation. It has the power and capacity to consolidate and integrate the masses for the national and common gains. While our primary schools may be compared to our primary industry, the institutions of higher learning can disseminate knowledge in such a manner as to bring out finished products and contribute in establishing a dependable fund of human resource. The New Education Policy (1986) has rightly laid emphasis on extending the facilities of education through numerous open institutions, innovative strategies and academic packages to our rural sector and in this direction it undertakes to restructure national system of education. The policy aims to view education as a dynamic agent with inherent capability to enable the future generation to internalise new ideas, constantly and creatively. A key emphasis in the new education policy is on the creation of human resource at different levels of economy, recognising that this is needed as the substrate on which research and development in all areas of scientific, technical and rural activities should be nurtured, thus leading to the ultimate objective of national self-reliance. The view constitutes a holistic approach. Correlating it to the rural context, democratisation of education is the appropriate step in the right direction. More precisely, the process has to be from information to knowledge and from knowledge to wisdom. In the process of social change this is the journey that our rural folk have to undertake in order to usher in an era of overall development.

Rural Development

Rural development as a consciously contrived programme came to be recognised only in the post-war years. Historically, it had numerous eras andex periments from slogans and philosophical theories of idealists down to the farm workers who had really brought about rural development. We had the Sarvodaya experiment touching the heart of villagers and motivating them into development. Tagore invoked holistic environment of rural set up to emphasise the role of education for improvement of life at grassroot level. Numerous formal projects and schemes including national extension service scheme were launched to educate the rural masses about the role of their effort in bringing about national development. The rural reconstruction programme was added as an adjunct to this. Gandhiji was a pragmatic exponent of rural development through khadi. His famous saying "Political freedom without economic freedom would be meaningless" stirred the soul of our rural sector and brought rural development into limelight under the banner of Swadeshi and Khadi, generating mass employment base in all villages. In Nehru's era accent on agriculture, Panchayati Raj and rural reconstruction besides the growth of cities in India ensured rural development for generating surpluses to sustain our independence. Against the Gandhian and Nehruvian philosophy and concern for rural development green revolution overtook the country with a direct interface with education through scientific experiments and innovations such as of hybrid seeds, multiple cropping, fertilizers, high yielding varieties, mechanised cultivation, reaching our villages besides credit schemes, marketing facilities and link roads. This was prefaced by Antodaya Programme i.e., unto this last approach reaching the lowliest in our villages. The programme of Integrated Rural Development, earlier called Community Development Programme came to emphasise poverty elimination and employment generation. It made significant strides in the development of rural poor. Small Farmers Development Agencies brought about the benefits of education close to the people. Despite the majority of colleges in the urban sector, the will to seek education proved the changing realities of our social milieu. The gains of education have been perceptible. The entire mass of technological knowledge has now become available to our rural folk. This pertains to animal husbandry, horticulture, handicrafts, handlooms, cooperative experiments, credit facilities, warehousing, health programmes and soil improvement. Subject-specific studies came to be undertaken relevant to rural development. The laboratory experiments have reached our farmers through vast extension programmes of our agricultural universities to break the barriers of caste system, ignorance, backwardness, poverty, primitive methods of cultivation besides structural imbalances of rural society arising out of people's resistance, non-cooperation and lack of motivation. Education has created the required awareness to bring about the social change in accepting these informative packages contributing to rural development through proper means of communication. In our fate oriented society education has brought about a radical change so as to make it work oriented. The whole change has been rather slow but the change is now sure enough to survive and ensure a promising rate of development. The educational programmes coupled with informative inputs have yielded results in alleviating poverty and banishing orthodox beliefs.

Thus it can be seen that while development is a social phenomenon, the role of education to accelerate its pace and enhance its reach cannot be undermined. In fact, education has been the prime-mover in this direction and coupled with effective communication strategies it is the only vital instrument of rural development. We remain linked to it. The mass of humanity living in the villages is able to join the mainstream of our social advancement only if our educational programmes are carefully targetted to rural development and are periodically monitored in terms of their interaction with our rural folk and their active participation in these programmes. □

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EDUCATION IN HUMAN VALUES

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I

VALUE EDUCATION AND THE NEW EDUCATION POLICY

On Value Education, our National Policy on Education states in part VIII paras 8.4, 8.5 and and 8.6, that :

> "The growing concern over the erosion of essential values and an increasing cynicism in society has brought to focus the need for readjustments in the curriculum in order to make education a forceful tool for the cultivation of social and moral values."
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> "In our culturally plural society, education should foster universal and eternal values, oriented towards the unity and integration of our people. Such value education should help eliminate obscurantism, religious fanaticism, violence, superstition and fatalism."
>
> "Apart from this combative role, value education has a profound positive content, based on our heritage, national goals, universal perceptions. It should lay primary emphasis on this aspect."

Yet it is not for the first time that our government or our educational experts stress the importance of value education. The Gandhian philosophy of education and the principles of basic education are value based. The University Education Commission (1948) headed by Dr. Radhakrishnan, the Secondary Education Commission (1952-53) headed by Dr. A. Laxamanaswami Mudaliar, the Education Commission (1964-66) headed by Dr. D.S. Kothari, the Committee of Members of Parliament on National Policy of Education (1967) and the University Grants Commission through its policy frame on Development of Higher Education in India (1978) have advocated the need for value education. Further, the University Grants Commission (UGC) has been making consistent efforts to create an academic consciousness suited to value oriented education. The UGC's view on the matter is well reflected in the recommendations of the conference of Vice-Chancellors of Indian Universities organised by UGC in Delhi in May 1984 :

> "Value orientation should be the primary objective of education at all levels. Since the objective of education has to be, primarily, the development of the personality of the individual so that he or she may play a meaningful and effective role in the development of the society and the country, it has to be value oriented. Value oriented education should not be equated to moral education, it has a wider connotation and includes values of physical education, vital education, mental education, aesthetic education, ethical education, spiritual education, etc. Value orientation does not merely imply an intellectual discussion on the theme of value as an integral part of the syllabus in various disciplines, but also the practice of those values in the day to day life by the students and teachers. The group, therefore, recommended that besides including value oriented subjects in the foundation courses at the first degree level, attempts should be made to introduce value oriented concepts in all subjects of studies. The Group further emphasised that steps will have to be taken to introduce value oriented concepts as a part and parcel of the life of the individual in primary and secondary education and even teacher education. It should also form an important component of the continuing education programme. Value oriented education should particularly include subjects like International Understanding and Peace, Human Rights, Knowledge of India and Indian Culture, Indian Values and National Heritage."

Since then the UGC had helped organisation of two conferences of Vice-Chancellors—one at the University of Rajasthan (Jan. 1985), Jaipur and the other at the Sri Sathya Sai Institute of Higher Learning, at Prasanthinilayam (Sept. 1987) to consider ways to promote value-oriented education. Both these conferences were also supported by the Association of Indian Universities.

The National Education Policy embodies the aspirations of a national consensus to infuse values into the contents of our educational inputs. While explicitly value education is indicated in the new education policy as mentioned in part VIII paras 8.4, 8.5 and 8.6 and references to it are made in part I, paras 1.4, 1.14; Part II paras 2.2; Part III paras 3.4, 3.5, 3.6, 3.7;

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Part V paras 5.13, 5.26 5.42; Part VIII paras 8.1, 8.2 8.3, 8.15, 8.18 and part IX para 9.3, implicitly it is emphasised throughout the Policy Statement. Thus the entire new education policy in a way is a declaration of our intention to make our educational system value based.

Inspite of the importance that the New Education Policy attaches to Value Education it is likely to remain a pious paper plan and our aspirational outbursts empty rhetorics, unless we are in a position to undertake with determination effective measures to implement the policy decision at all levels.

II

URGENT NEED FOR VALUE EDUCATION

Contemporary Indian situation witnesses ambivalence if not complete confusion of values. The character of the Indian has degenerated to such an extent that our social workers, enlightened citizens and statesmen who are concerned about the future of our country have been giving alarm signals and calling for immediate remedial measures. Such warnings and exhortations do not seem to have made much impact on our efforts to take urgent steps to improve our character and build a New India.

As on December 8, 1987 there were 95 sitting members of our Parliament who were guilty of unauthorised occupation of government accommodation to which they were not entitled. Of these 70 belonged to the ruling party, Congress I, and the rest to the opposition. The Shankaracharya of Puri is all for glorification of the henious practice of Sati for which he maintains that he has the support of ancient Hindu religious texts. While another religious leader Swami Agnivesh repudiating the claim of Hindu religious sanction, led on December 8, 1987, a padayatra along with other sadhus to Deorala where a Sati was committed recently to protest against the practice. While the Dharma Raksha Samiti, an organization consisting primarily of Rajput youths wielding swords in their hands in public, conducted a campaign to protect the practice of Sati, the Government took only half-hearted measures to prevent the occurrence and glorification of this hoary practice, as for political reasons it was afraid to antagonise the orthodox sections of society, particularly the Rajputs and the powerful Agrawal community which owns the multicrore Rani Sati Temple complex in Jhunjhunu and other places of Sati worship. Gandhiji called Sati 'a barbaric practice developed out of superstitious ignorance and egotism of man' (*Young India*, 1931) and thus condemned it vehemently. Ye after 40 years of independence the practice of Sati has been allowed to linger on by the government of the very party that seeks inspiration and support from the teachings of Gandhi. This pertains not only to the practice of Sati but in regard to almost all teachings of Mahatma Gandhi. Whether it is in regard to the practice of child marriage, untouchability, poverty, basic education, national integration, national self-reliance or non-violent social reconstruction, our practice has been and is far from our declared intentions. In a country where a non-violent movement led by Mahatma Gandhi could win its freedom from the mighty British Empire, non-violence has almost become a forgotten concept. Violence now reigns supreme in all walks of life. Violence of all kinds in all segments and levels of our society has become the order of the day. The present day youth, egged on by anti-social elements, display their faith only in violent behaviour indulging in terrorist activities or resorting to violent riots and demonstrations burning of buses, destruction of property, and similar actions to achieve their goals. The caste system still dominates the Indian social scene and reinforces the values of social inequality and social hierarchy and distorted values of dignity of labour. Social discrimination on the basis of caste and sex continues unabated, conspicuous consumption and vulgar display of wealth put to shame all our claims of efforts to eradicate poverty and suffering. In short, India of Gandhi's dream has become a country of violence, bribery, corruption, nepotism, adulteration, smuggling, hoarding and social vices of all kinds. Far from being a spiritual heaven, India has become one of the most hardened materialistically oriented societies in the world. Money power has taken over moral power. It has become a common belief that those who have money can get anything done in India, can get out-of-turn admissions in schools and colleges, get jobs without requisite qualification, get transfer to places of one's choice, can secure promotions even if one does not excel in work, can get railway reservations over others, get criminal cases dropped, get exempted from punishment and fines, evade income tax, buy bridegrooms and what not. A stage has been reached when almost anything can be secured through money, even Godly favours and Godmen's blessings seem to be available only for the moneyed. The root cause of this galloping corruption, is the self-centred politician who is concerned more with himself than with the society. The huge election expenditures of candidates of various political parties alone give a clue to the ever-expanding spiral of corrruption. Why would or how could an MLA or an MP spend so much money in his or her election, unless he or she as sure of getting a return of multiples of his election xpenditure once he gets into the assembly or parliaent ? This political corruption has so penetrated and orroded our entire social fabric that an average Indian as become a valueless, characterless ego-centric brute evoid of any concern for the rest of the society or or high values of life. It would become impossible to top this fast developing degeneration of Indian social rder unless immediate remedial measures are underaken. However, the contemporary social scene and its athetic manifestations have aroused the consciousness of our enlightened citizens, which provides a ray of ope. The following quotations are from three articles hat represent the concern of the civic conscious society riented Indian intelligentsia:

1. "Gandhiji would not have counted the progress we have made in many fields as subjects of self-congratulation today, knowing that political parties have used corruption, religion and caste in their strategies to gain political power. This has bred violence, and communalism that has led to over 3000 communal riots since 1947. We then have to set up expensive and elaborate committees to solve the problem !

Is this the price we have to pay for democracy ? Frankly, people are fed up also with the daily accounts of misdeeds, beastliness and corruption because it removes every vestige of national pride we might once have had. In a country with such fervent worship of the gods, our human idols are now being presented only with feet of clay with nothing above the ankle. How can a country respond to this image of leadership? Democracy needs leadership the people respect, not this sordid commerce in short and ego-centric political gains.

India is undoubtedly a phenomenon. It throws up fictional character and fictional scenarios of bewildering entertainment and diversity, yet as subtle as a third nerve, a pragmatic nationalism asserts itself in times of crisis. This is happening now." (Tara Ali Baig in the article "Values Old and New—"*Hindustan Times* 16.9.1987)

2. "How is contempt for law engendered ? The process is a continuing one, the effect permanently damaging. It begins by local politicians and officials manipulating the posting of favoured officers in key posts, especially at the level of the police station. Naturally the officer posted as an act of favour has to make payment, both in cash and by way of overlooking the criminal activities of his sponsors. At the cutting edge level of the police station the criminal soon acquires a special status, at the cost of law-abiding citizens. Gambling, prostitution, the protection racket all flourish, to the enrichment of criminals, politicians and officials. These very criminals are often the source of communal trouble and the police and magistracy, which are in their pay, are naturally unable to act against them.

The second link in the chain is the defiance of law by criminals, in the knowledge that if they are caught, they will either be able to bribe their way out of trouble or their politician friends will ensure that the cases are withdrawn. Gradually only those persons are handled before the courts as accused who either have no god-father or whose offences are petty ones. With the fear of the police gone because the local station officer is in the pocket of a criminal, the fear of the courts also goes because cases are not pursued vigorously.

Another major link in the chain is the weakness of Government in prosecuting cases where a community or a group has held another community or group to ransom and terror. When a riot occurs and property and lives are endangered, there is no justification for withdrawal of cases against the rioters. The fact, however, is that there is almost no follow-up of such cases and very often the rioters are released from jail and paraded around like heroes. How can there be respect for law and the rights of others if rioting is permitted with impunity ?

The most vital link in this chain of disrespect for law is forged when some law makers become law breakers. Here are three examples. The former chairman of a public sector corporation in Madhya Pradesh is alleged to have retained for personal use a vehicle of the corporation after he ceased to be Chairman. The corporation, which has filed a suit for recovery of the vehicle and damages, has been told at the highest level in the State to withdraw the suit. In another case, the supporters of a certain politician objected to the lawful allotment of a house to an officer, subjected him to personal humiliation and only dispersed when the staff union of the organisation headed by the officer forcefully intervened. No action has been taken against those who harassed the lawful occupant of the house. In yet another case, Government has ordered the withdrawal of a prosecution of a person against whom a prima-facie case of attempted murder was made out and the matter placed before a competent court. The unfortunate thing is that all three persons concerned are legislators, either in a State or at the Centre." (M.N. Buch, 'A Lawless 21st Century' *Times of India* (30-9-1987).

3. "It is intensely disconcerting that a community of teachers should indulge in such an attack and humiliate their fellow-teachers in such an intolerable situation. Those who are supposed to have been entrusted with educating our youth and uplifting their character to become worthy citizens of this great country, were indulging in violence against their own colleagues. Isn't this a case of total abdication of moral responsibility ?

Let us look at this shocking experience from another angle. Take the Federation President who was beaten up by his colleagues. He is known to be a distinguished teacher. How will he be able to exhort his pupils to practise discipline and preserve integrity ? And the teachers who have participated in such goondaism, how can they go back and claim the respect and attention of their pupils ?

It is this exhibition of moral degeneration of a section of the teachers who are supposed to be custodians of our civilisational heritage that has become a matter of grave concern for all right thinking citizens of this country. It provides the measure of our abdication of cherished values. It is time eminent academics instead of withdrawing into their shells come forward to enforce civilized norms of conduct on the part of their colleagues." (Nikhil Chakraverty 'Where have all the values gone ?' *Times of India* as reproduced in the *University News* 21-9-1987).

Where have all our values gone ? Surely, our values are cherished as our great heritage enshrined in our sacred texts and safely treasured in our bookshelves and libraries, only to be referred to on occasions when we need them in support of our ego-centric demands. We praise non-violence and practise violence, we preach socialism, but perpetuate inequalities, we abhor corruption but we indulge in all sorts of corrupt practices, we preach morality but do not hesitate to commit immoral and unethical acts, we pretend spirituality, but practise materialism, we advocate equality and social justice, but practise exploitation, we teach values but act without them. In short, we have become a nation of hypocrites. It is in this context that there is an urgent need to inculcate values at all levels of our society, without which we will not be in a position to arrest our accelerating social degradation. Therefore, education in human values becomes of paramount importance in the Indian context.

III

VALUE EDUCATION AND PERSONALITY DEVELOPMENT

The type of society we have is a reflection of the type of relationships which the individuals develop. The interrelationship and interactions of the individuals depend upon the personalities of the individuals, that is their values, beliefs and attitudes. The individual, right from the time of its birth internalizes the values, beliefs and attitudes of others by a process, the sociologists call socialization. Socialization is a process by which the individual adjusts itself to the group by internalization of the norms of the group. Internalization of the culture of the society or what we call socialization of the child takes place in the family, school and peer group situations. Socialization does not stop with the children; it is a continuous process. Adult socialization takes place through the multiplicity of interactions in which the adult is engaged. Though socialization is used in relation to children it is a general and continuing process; an adult can at any age acquire new values by interacting with new groups.

During the last few decades, and particularly since Independence (1947), the traditional society of India has been undergoing enormous changes. The Indian social system with its agro-handicrafts economy, feudal-dynastic polity, religio-philosophical foundation and a structure based on joint family, caste and village community has been shaken to its foundations. Multi-directional forces of urbanization, industrialization and socio-educational advancement have affected most aspects of traditional Indian society. These various processes have diluted a number of traditional patterns. The cumulative effect manifests itself in the individualisation of attitudes and values and concomitant changes in the same direction in the social institutions. Accepted ideals and values are changing considerably with the result that the accepted world-view and verbalised idea system are in a state of flux. However, these recent techno-economic changes have not swamped the traditional structure absolutely. There is a zone of indifference. In this realm tradition survives. There, as it were, traditional and modern values coexist. Western ideals, values and attitudes have permeated the traditional system and neither the traditional nor the modern remains the same. This had also developed a state of ambivalence.

At this time when Indian Society is at cross roads, when there is a conflict of values, and consequent ambivalence all-round, which values, what kind of value education can be of help ? Broadly speaking, values are what one considers desirable. But whatever one considers desirable need not be shared by the group of which the individual is a member. Further, what the individual considers desirable may be rooted in egocentrism and may go against the society. Therefore, values, to which we refer, are those desirable ideals which are intrinsic in themselves and are worthy of being pursued both from the individual and societal points of view. Such values serve as normative guides to individual behaviour and help in social integration and social solidarity. It is these values which we would like to impart through our education system.

The world of values is rich and variegated, There are certain basic universal perennial human values applicable to mankind anywhere in the world. And there are value systems specific to different socio-cultural entities at different periods of time. A list of values will include : truthfulness, sincerity, integrity, honesty, goodness, beauty, love, non-violence, conscientiousness, compassion, endurance, perseverance, self restraint, independence of thought, righteousness, courage, friendlines, generosity, selflessness, equanimity in thought, feeling and action; concern for other living beings, empathy, excellence, grace, decency, concern for the natural environment, tolerance, confidence, self esteem, honour, simplicity, being responsible, innovative, being adventurous, democratic way of living and acting, secularism, socialism, equality, cooperation, national integration, international brotherhood, removal of poverty, caste, illiteracy. ill health and backwardness; upliftment of the weaker sections, pride in heritage and culture, peace, incorruptibility, law abiding, community orientation, and public duty, concern for public property, civil sense and responsibility, stability, self-reliance, scientific temper, social justice, etc. These values can be categorised as spiritual, religious, moral, ethical, social, humanistic, personal, political economic, aesthetic, altruistic, etc. They can be classified as universal and particularistic, basic or core and peripheral, etc. But the classification that suits value education most is a classification of values into three categories (1) self oriented, (2) society oriented, and (3) altruistic. The self oriented values are those values the inculcation of which is essential for improvement of one's character like truthfulness, ahimsa or non-hurting, punctuality, dignity of labour, cleanliness, patience, self-reliance and equanimity. Society oriented values are those values which contribute to better social relationships as for example courtesy, gratitude, duty towards others, tolerance, magnanimity, cooperation, understanding, compromise, compassion, kindness and non-violence. Altruistic values if internalised should help the individual to transcend his personal interest in favour of the good of others. The examples of altruistic values are fraternity, sacrifice, forgiveness, concern for others, empathy, service, sharing, sympathy, hospitality, justice and love.

Shri Sathya Sai Education in Human Values Trust emphasizes five basic human values in their value education programme—righteous conduct, truth, peace, love and non-violence. A Gandhian programme of value education will add to it, the values of dignity of labour and self-reliance.

Some of these values go contrary to the values inernalised by children from the cultural settings of the groups they belong to. If children grow up in a traditional socio-cultural milieu, they will imbibe values of non-egalitarianism, sectarianism, egocentrism and ethnocentrism which are opposed to values of equality, fraternity, cosmopolitanism and altruism. Therefore, the task of educational institutions assumes great significance. Opportunities have to be provided to unlearn the wrong values imbibed and simultaneously to learn positive human values which are conducive to social development. The child and the adult alike who internalise narrow cultural norms will have to be desocialised and resocialised by internalisation of basic human values. Socialization is essentially a learning process aided by primary and secondary groups and associations. Education is also learning process; the difference being only in its elements of voluntariness and directionality. The individual is helpless if he/she assimilates the wrong values on account of the membership of sectarian or closed social groups and the subsequent natural process of socialization that takes place involuntarily through the social contact and interactions with the rest of the members of the group. Therefore, through new educational strategies the individual has to be motivated and provided opportunities to imbibe positive human values which will be helpful to him and to the society in general. With, by and large, a tradition oriented society with all kinds of dogmatic, bigotic, narrow-minded and parochial norms and values constituting the core of the culture which is being internalised by the majority of the illiterate population of India that is expected to rise to 500 million by the year 2000 A.D. with the present 36% literacy rate, both our formal and non-formal education programmes should aim at a simultaneous de-education — de-socialization and re-education — re-socialization process, in terms of positive social values. Only when the individual improves her/his character, only when the individual develops an altruistically oriented personality can we hope to stop the degradation of Indian social system. Altruistic personalities will develop only if we are capable of providing the individuals opportunities to imbibe positive human values. With the progress in value education it would be possible for us to resolve value conflcts and remove value ambivalence and save our society from the present situation of impasse and help developing human personalities whose attitudes and actions will contribute to the building of a qualitatively better Indian society.

IV

VALUE PRIORITIES : VALUES OF NON-VIOLENCE

Values of non-violence should be accorded priority in any value education programme in India today. Values of righteous conduct, truth, peace, love and non-violence, dignity of labour and self-reliance should from the core of our value system. As indicated above, the contemporary Indian social scene is really pathetic. Human society in India is compartmentalized consisting of innumerable vertical and horizontal divisions as a result of hierarchies and differentiations of all kinds that exist on the basis of caste, religion, region, language and other narrow considerations. The rich and the poor, the haves and have-nots, the elites and the masses and the many categories of social groups that exist, serve more as causes for discriminations, tensions and conflicts than for harmonious social relations. Different sects of the same religion are fighting to destroy each other. Terrorism is sending shock waves throughout the country. Violence has become a social phenomenon that threatens the very fabric of our social order. The authority of the family which is the fundamental social institution that determines the nature of any society, stands eroded and the positive familial values seem to have ceased to exercise any normative control. The new values that replace traditional values have still to establish their credentials and the capacity to usher in social progress. In this context it is imperative for us to adopt new educational strategies to promote egalitarian values that help us to eliminate social inequalities and injustice and to establish a qualitatively better social order. This indeed is no easy task, but if efforts are made, it is not unattainable. The first step to take in this direction is to undertake the reform of the individual. As Prof. Bart Landheer ('Pause for Transition'. The Hague, 1957) has mentioned, "Ultimately, it is the individual with all its attributes that is the only reality which is before us, but it is a reality that should not be isolated, even in theory, from the setting in which the life-drama unfolds itself and from the general natural laws which seem to govern and control the actions of the player, who appears in the most startling variety of roles."

The individual is the only real entity in society which is tangible and which can be perceived by others, but the individual is not an isolated phenomenon. The individual and society are invariably interrelated. The individual is dependent upon the society in which he is born and grows up, for his values, ideas and beliefs and the individual in turn is responsible for society's continuance and transmission of its culture. The individual is influenced by several groups, namely, kinship, professional, economic, regional, national or civilizational groups, of which he is a member. For example, in the beginning of his life, the individual is influenced mainly by the family, and the kinship group, peer groups and eventually mainly by the different secondary groups of which he is a member. Thus, the relationship between the society and individual is obvious : one does not and cannot exist without the other. Individual is not a mere biological organism; it is the impact of society that makes the individual a person i.e. an individual who can contribute to the continuity of society. Similarly, the society, i.e. the sum total of social relationship, maintains its continuity through individuals, through a process of socialization which moulds the biological organism into a social being, an individual person.

It is in this context that the Gandhian concept of individual transformation and character development assumes significance. The Gandhian system of basic education is essentially directed to achieve precisely this goal. 'While the present education system is engaged in promoting accumulation of information and acquiring a spirit of competition that develops egotism and alienation, Gandhian basic education develops three aspects of the individual—(1) the mind, (2) the heart, and (3) the spirit; the child knows with his mind, loves with his heart and creates with his hands and thus become a fully developed integrated personality.' (Guy de Mallac, Seven steps to Global Change, 1987). "Children in Gandhian Schools don't accumulate learning as many people accumulate assets or riches—they don't learn for the purpose of being first or winning a competition, at the expense of others. Rather than being acquisitive/competitive, Gandhian education is cooperative. It prepares the individual to fit into a nonexploitative social structure. While it endorses the development of intellectual abilities, Gandhian education agrees with Albert Schweitzer that love is the supreme knowledge, and views as the highest value the creation of a non-exloitive and loving framework of relationships with others. "Gandhian Basic Education" (or "New Education"—Nai Talim) fosters self-sufficiency. With hat aim in mind, students do their own laundry, work in the kitchen, sweep and scrub, practice gardenng, weaving, pottery, carpentry—as well as learn the three R's and acquire knowledge of essential academic subjects. In summation, "Basic Education" is : (1) Child-centred or learners-centred; (2) dynamic; (3) cooperative; (4) non-violent; (5) geared towards the acquisition of self-sufficiency." (Guy de Mallac, 1987).

The values of non-violence imparted through basic education, may develop altruism and altruistic personalities which would help in the creation of greater social harmony. With substantial increase in love, sympathy and cooperation in interrelationships of individuals there will surely be a qualitative improvement in social conditions. A truly non-violent person radiates peace, compassion and kindness to other human beings. His very existence in a social group will be a source of inspiration for positive social action. Therefore, the values of non-violence should have a prime place in any programme of value education.

V

THE METHODOLOGY OF VALUE EDUCATION

Enough has been said about the value of value education. No further clearance is needed than the sanction of the new education policy to make our educational system value oriented. But how to do it? Very little is available by way of a guide to go about promotion of value education and much less to assess and understand the impact of even marginal programmes like moral education programme imparted in schools, in terms of actual assimilation of values in one's personality system and improvement of character and behaviour, Therefore, it is imperative to develop a sound methodology for impartation and evaluation of value education. Such a methodology should be dynamic and should consist of specific techniques and methods to impart values to individuals of different age groups and a system of evaluation of the effectiveness and impact of value education programmes, the results of which could be utilised to reorient the methodological strategies. As the Ministry of Education's Working Group which reviewed the Teachers Training Programme in the light of value orientation has rightly put it (Govt. of India—1983):

"It is, however, sometimes argued that there is a valid distinction between knowledge and values and that while knowledge can be taught, values cannot be taught. But when we examine this view more closely we find that what is meant is that the methods which are valid and appropriate in the field of learning in regard to knowledge are not applicable to the field of learning in regard to values. We may readily accept this contention, and we may insist on the necessity of recognising the fact corresponding to each domain of learning there are valid and appropriate methods and that the effectivity of learning will depend upon an ever-vigilant discovery of more and more appropriate methods in each domain of learning. It is clear, for example, that while philosophy can be learnt by a process of discussion, swimming cannot be learnt by discussion. In order to learn to swim one has to plunge into water and swim. Similarly, the methods of learning music or painting have to be quite different from those by which we learn mathematics or physics. And indeed, when we come to the realm of values, we must recognise the necessity of a greater scruple in prescribing the methods which can be considered to be distinctively appropriate to this field.

One speciality of the domain of values is that it is more centrally related to volition and affection, rather than to assume that value oriented education should be exclusively or training of volition and affection. This point needs to be underlined because of two reasons. Firstly, it is sometimes assumed that value oriented education should be exclusively or more or less exclusively limited to certain prescribed acts of volition and that the value oriented learning should be judged by what a learned, 'does' rather than what he knows. In our view, this is too simplistic and exclusive, and we should avoid the rigidity that flows from this kind of gross exclusivism. Secondly, and this is an opposite view—it is sometimes argued that learning is primarily a cognitive process and, therefore, value orientation learning should largely or preponderantly be limited to those methods which are appropriate to cognition. In our view this, too, is a gross exclusivism which should be avoided. We recommend, therefore, that while methods appropriate to volition and affection should be more preponderant, methods appropriate to cognition also should have a legitimate and even an indispensable place. This is reinforced by the fact that the striving towards values stirs up the totality of the being and cognition no less than volition and affection is or can be stimulated to its highest maximum degree, provided that the value oriented learning is allowed its natural fullness."

There are three entities involved in any value education programme. (1) The teacher, (2) student and (3) the society. The contents of teaching, the example the teacher is able to provide and the way the instruction is carried out are important aspects of good teaching. Equally important are the qualities of, receptivity, motivation and the capacity to comprehend on the part of the student. The efficient performance of the roles of the teacher and student depend on the family and the overall social situation in which the teacher, student, and the teaching-learning situation takes place. Thus the essential prerequisites of value education are exemplary teachers, motivated students and a favourable socio-cultural milieu. The quality of the teacher and the standards of our teaching are indeed at a very low ebb at present. Therefore, in the various teacher training programmes special emphasis has to be given to equip the teachers with necessary qualities and a motivation for value education.

Apart from the meagre moral education that is being imparted in the schools, as the Working Group to review Teachers Training Programme rightly recommends : "a well conceived programme of studies of various subjects should naturally be provided both in their contents and thrust the requisite materials for value education" and "radical measures should be adopted to change the present degree-based 'anti-value oriented examination system' with a view to unilaterally fix the educational process on the right aims of education." This calls for a complete overhauling of our syllabi at all levels. A content analysis of school and university curricula would reveal that the courses are hardly intended to improve the quality of the individual; they are primarily for acquisition of information. Therefore, the recommendations of the Working Group : (1) that the programme of studies should be so carefully devised as to emphasize those aspects which can readily provide to teachers and students the required opportunities, conditions and materials for value education, (2) that specific areas of value orientation should be given special attention, (3) and that in the totality of educational programmes, the core programme should be of value education.

The way in which the teacher communicates ideas is also significant. An idea supported by stories and facts and presented through audio visual aids might make a greater impact than merely communicating it in a rough and prosaic manner.

Much more important than the curriculum or a particular way of instruction is the exemplary behaviour of the teacher. Even if a teacher is able to impart the highest values in the most efficient manner, if in actual life he is guilty of misconduct, all his preachings will result in nothing. On the contrary, the noble character and the exemplary behaviour of a teacher will provide enough incentive to students to develop positive values of life even if such a teacher does not offer any formal instruction in value education.

Similarly the family, the peer group, the community and the wider society play a vital role in motivating and influencing both the teacher and the student alike to assimilate values and to resort to value oriented behaviour. This is perhaps best explained by the concept of 'sat sanghs' the social occasions organised to meet good people.

Both formal and non-formal education should have value contents. As a matter of fact whatever be the historical reasons, the formal and non-formal educational processes in India run parallel to each other without much convergence, whereas they should work in a coordinated manner to make effective our overall educational efforts. Radio, television, newspapers, magazines and the various audio visual aids should be utilized for value education and character building through formal and non-formal institutions. Separate programmes have to be envisaged for teachers,students and members of the community.

The Sathya Sai Education in Human Values Trust has 'worked out a methodology for their value orientation programme. (Our Role and Human Excellence, Sathya Sai Foundation, 1987). So also the All India Association of Catholic Schools has been organising programmes of value education (How to live with values, M. Pia Nazareth and Maria E. Waples, 1980). The Gandhian basic education scheme has its own methodology.

However, a full-fledged methodology of value education is still to emerge. Introduction of value education programme in our education system has only just begun. The experience that we will gain over the years will indeed help us to evolve a sound methodology for value education in India. But to achieve positive results, we must have efficient methods and techniques even to begin with. Let us hope that the beginning that we have already made in value education will yield rich dividends in terms of both methodological insights and positive impact.

VI

VALUE EDUCATION AND UNIVERSITIES

Universities indeed play a significant role in providing educational leadership. When students join the University they may already have acquired certain positive and negative values, a properly oriented value cation in the university system will indeed be ɔful, especially when the students have already ı exposed to value education programmes at lower ls. The university can perform a reinforcing role, eby establishing continuity. In case of those who e not been exposed to value education at all, surely University can provide opportunities to assimilate itive values. Further through their formal and ı-formal channels, universities alone can offer up- date teacher training and education programmes ich will have substantial value education contents. erefore, it would be wrong to suggest that univer- es have a lesser role to perform in the context of lue education.

The following programmes suggested for univer- ies to undertake should give an idea of what uni- rsities can do to promote value education :

(1) Universities should develop source materials r value orientation in education in the form of ritten lectures and audio visual aids and introduce lue oriented education schemes.

(2) Emerging out of man's complex relationship ith fellow human beings and with nature in a broad nse, a deep sense of love and concern for the animate d inanimate world around him is an essential part of an's awareness of the need for conservation of reso- rces, renewable as well as non-renewable. The sublime alues of oneness with nature in beauty, conservation nd preservation need to be nurtured and protected nd promoted. For this purpose, universities should stablish interdisciplinary Centres of Ecology, Environ- nental and Conservation studies.

(3) The pivot of a programme of value education vill be the teacher. His role is crucial. Universities hould conduct :

(a) National tests for appointment of teachers.

(b) The probation period for newly recruited faculty members in universities and colleges should be uniformly made as two years, during which they should be required to successfully undergo a training and orientation programme. While part of the training and orientation should be exclusively for deepening knowledge in the discipline, including acquaintance with recent and important developments in the subject of specialisation, the other part should be for the development of qualities, capacities and skills with special thrust on theories of learning, psychology of youth, communication skills and value education. At the end of the course, a dissertation should be obligatory.

(c) Under the Faculty Improvement Programme of the UGC, value orientation should be made an essential ingredient of the training.

(d) Special fellowships of 15 months' duration should be instituted. These fellowships should be awarded to two teachers of 10% of selected affiliated colleges. Out of these 15 months, 3 months should be devoted by the teacher to undergo training in value orientation at specially selected centres of higher education/ colleges where such programmes are already under implementation. The trainees should be provided the facility of free board and lodging and an outstation allowance of Rs. 1000/- per month.

Such specially trained teachers should then have the responsibility of developing a group of at least 4 teachers in their colleges. When a viable group has thus been formed, regular classes in value orientation with selected reading materials should be started and the students attending such classes should be given due academic credit as is given in other regular subjects.

(e) All teachers must be involved in programmes on youth welfare and extension programmes suitably synthesized into a plan of action, oriented towards the local and regional needs. A well planned pre-service and in-service training-cum-orientation programme should be arranged for these teachers pertaining to the various roles in the above mentioned areas. Improved and extended facilities of sports, games, gymnasium, etc., should be made available in universities and colleges for inculcating in teachers and students qualities like team spirit and cooperation. Due academic recognition should be given to the work put in by them in these areas as well as in extension services rendered to the society by the institution. The activities under NSS, NCC, Scouts and Guides, Art and Culture and other subject associations should be promoted by providing incentives in terms of academic recognition. As a part of curriculum, educational tours to the different parts of the country, important exhibitions and fairs be organized. These tours should be supervised by senior faculty members along with planned and action oriented activities. At the end of the tours, the students must be required to submit reports identifying the significance of various values recognised and learned by them and due academic credit be mentioned in their degrees/diplomas awarded in their basic disciplines.

(4) National Service through participation in approved social work and national reconstruction activities should be compulsory for all students. A nine months' national service and three months' work experience should be made compulsory before the first degree is awarded.

(5) Working and learning should be the objective of education at university level. A 'work ethos' should be created. All teachers must stay in college/departments for 6 hours a day.

(6) The extension role of the universities should be enlarged by a greater involvement of the university community in the programmes of Adult Education, Continuing Education, Population Education, Conservation of Energy, Environment as well as Research and Development in the solution of the problems of the community around it. The summer breaks and the winter breaks should be effectively utilised for reorienting the participation of the students and teachers in camps and workshops, etc., organised for this purpose. A block or a village be adopted by each University Teaching Department of the College for bringing about its transformation and development by scientific methods. Appropriate institutional arrangements be made by the universities and colleges for planning and continuing exploration of various activities in these fields.

(7) All resolutions and suggestions made in connection with National Integration by various bodies such as exchange of teachers, admission of 20% students of other regions, teaching of one Indian language other than the regional language, selection of teachers on All India basis, studies of all religions with equal emphasis and observance of national days and festivals of various communities, educational tours, community singing be implemented in actual practice. The textual materials in various subjects must emphasize National Integration. An annual report pertaining to these activities be obtained from every institution and monitored by the cells created at Universities, State Departments of Education, UGC and the Central Ministry of Education for National Integration.

(8) Associations of Teachers, Students' Union, Unions of Non-teaching Staff should evolve codes of

(9) A Tribunal for each university with a c mon chairman for a cluster of Universities be in tuted to look into the grievances of employees.

(10) Degrees should be delinked from job that examination does not remain the main focu attention for students as well as teachers. Suffic degree of freedom be allowed to the student change their stream of studies at all levels on basis of National and State level tests conduc from time to time.

(11) All universities and colleges and the facu should show a commitment towards Gandhian, c tural, secular, national and scientific values. A co tant endeavour must be made by them to ident new areas of activities for the promotion of th values. The UGC must foster Research Fellowsh and National Associateships in studies pertaining these values.

(12) Foundation courses on cultural herita linguistic aspect of education and values, populat education, freedom movement and current history development of India, scientific progress achiev methods and discoveries, resource management a human development, international cooperation a world peace and elements of agricultural and ind trial development be introduced in all universities a colleges for a continuous nurturing of values necess for promoting the unity of India and progress nationalism.

(13) Formation of social service leagues sho be encouraged; social work should be given acader credit.

(14) All educational institutions should provi adequate opportunities to informally inculcate po tive values in our youth by providing facilities sports, games, debates, get-togethers and other ext curricular activities. Participation in such activit should be given academic credit.

(15) All universities should be encouraged establish University Community and Citizens Assoc tions. The parents, teachers, karamcharis and alu ni and other citizens of the city interested in prom tion of values should be the members of the Associ tion. The Association should meet atleast twice year and organize such activities as are conducive the attainment of the objectives of Value Orientati in Higher Education. Formation of separate Alumr [illegible] Associations and Teacher-

ons should also be encouraged and they should be dequately represented in the Association.

(16) A Centre for indepth study, research and ndertaking action-oriented programmes should be et up at each university for promotion of value oriented education.

A good deal of success in restructuring our university education in terms of value education depends on the efficiency of the management of the university. A Vice-Chancellor has a great responsibility in guiding the destiny of the university. If the Vice-Chancellor s incapable of functioning independently, honestly and conscientiously he is doomed to destroy the university system. Most regrettably many Vice-Chancellors have not been able to discharge their responsibilities, with a firm commitment to certain fundamental values which we want our students to imbibe. If a Vice-Chancellor feels obliged to a politician or a group of teacher politicians for the position he holds and acts in accordance with their demands and pressures abandoning all basic values, how can one expect that teachers and students of the university he presides over would develop exemplary character ? If contractors and politicians use their money power and political power to pressurise a Vice-Chancellor to do things which are unethical, the blame is not only on the Vice-Chancellor but indeed it stands shared. The presents system of giving university construction contracts to money hungry private contractors, as has been indicated by a number of reports including those on Central Universities, is responsible for many corrupt practices in the university system. The contractor with his money power not only indulges in corrupt practices to increase his margin of profit but also often manipulates appointments, examination results and so on. The politician by getting appointed one of 'his men' as a Vice-Chancellor gets all favours executed through him which gives him perpetual political advantages. If universities have to be saved from this extraordinarily deplorable condition and make them repositories of virtues and values, real abodes of the great goddess Saraswathi, the present method of appointment of a Vice-Chancellor has to be immediately dispensed with. Persons of character, of indomitable will to execute fair decisions without fear or favour, in the interests of the university community and the wider society, should be charged with the responsibility of managing universities. They should be selected through reputation techniques rather than through the farcial committees as is done at present. The Vice-Chancellors so appointed would not cling on to their positions, sacrificing all self respect and human dignity in a servile manner for the sake of keeping the chairs when they are faced with insurmountable opposition from anti-social forces to the positive and innovative educational schemes and measures which they want to execute. Similar is the case of other managers of the university system. Whether it is the Registrar, Controller of Examinations, the heads of various units and departments or professors or other teachers and employees, they should all be of exemplary character. No individual with a record of misconduct has any place in a university system; such individuals should be sent out of the university irrespective of all pressures and opposition. There should be periodic assessment of the conduct and behaviour of all university employees so that academic leadership is ensured in the hands of persons who can give a proper and enlightened direction to the education system. What we said about the university system applies equally to the schools and colleges, headmasters and their teachers and employees. We have to particularly keep this in mind when we are establishing large number of autonomous colleges. At all levels it is imperative that immediate measures are taken to regulate the management of educational institutions. Unfortunately educational management has not received adequate attention in the new policy statement. But if we have to implement the New Education Policy in full measure, then there is no way but to ensure a proper managerial system for our educational activities.

But it appears the very implementation of the New Education Policy is in peril. It is almost two years ago, we announced after the approval of our Parliament, our New Education Policy and declared: (1) that higher education is a crucial factor for national development and survival and hence has to play a key role in producing teachers for the educational system (Part V, para 5-24), (2) that State level planning and coordination of higher education will be done through Councils of Higher Education, the UGC and the Councils will develop coordination methods to keep a watch on standards (Part V, para 5-30), and (3) that in the interest of greater coordination, a National Body covering all aspects of higher education will be set up. No Educational Pandit seems to have any idea as to when these Councils and apex body, the very agencies through which we hope to get our new education policy effectively implemented would be set up.

Perhaps the University Grants Commission is overburdened by fund allocation and thus unable to devote adequate attention to the control of educational standards and perhaps no time at all for undertaking innovative schemes for promoting value orientation in education as is evident from the neglect that the so-called University Grants Commission Committees on Gandhian Studies, National integration and Value Orientation in education suffer. Is the Association of Indian Universities in a position to perform the role of a catalyst and make the University Grants Commission and our Universitics function more effectively to make our education value oriented which will be a fitting contribution to the implementation of our New Education Policy and to our efforts for national reconstruction ? □

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NEW EDUCATION POLICY
Making the System Work

G.B.K. Hooja*

The New Approach

Let me point out at the outset that the programme of Action (POA) statement made in this regard is just a rehash of old and archaic platitudes. It just does not click. Referring to the 3 short paragraphs on this subject in the National Policy on Education (NPE) (1986), it endorses the necessity of introducing discipline into the system "here and now, in what exists", of giving a better deal to the teachers to go side by side with a greater sense of accountability, providing improved students' services along side an insistence that their behaviour is in accordance with acceptable norms and affording better facilities to educational institutions to ensure that their performance comes upto national and state-level norms. Appreciating that any insistence on imposition of rigid uniformity or lifeless discipline would not be in consonance with the general tenor of NPE, and the process to be followed in creating the new educational order has to be participatory, co-operative and based on renewed faith in the country's future, it proceeds to develop a "clear" approach to this "crucial" task in the following "essential" aspects :

(a) Certain norms of performance must be laid down for observance by the administration, teachers, students and educational institutions. It should be made clear that these norms are non-negotiable.

(b) Non-observance of these norms should inevitably lead to certain consequences.

(c) Some immediate measures have to be taken to improve the working conditions of teachers and the conditions in which students study and live. Similarly, with regard to the educational institutions.

The POA further goes on to say that the faith manifested by the nation in the teachers and the students, as reflected in NPE, implies that they will be systematically consulted at various stages of planning and implementation of Making the System Work. Indeed much of the responsibility for this will rest on teachers and students.

Any observer of the educational scene over the last 4 decades would find that these issues are hardy annuals which have come up for consideration in academic debates and conferences, committees and commissions, from time to time. Surely and steadily, suitable action has been taken to improve the working conditions of teachers and students in accordance with availability of resources and assessed requirements. There has been constant exhortation to draw up and follow codes of conduct in keeping with the responsibilities and status of the teachers and students. But the problems persist.

Parasitical Culture

The bane of our educational system is that it is elitist and unproductive. On the one hand, it produces highly qualified persons who find local employment avenues too stifling and are, therefore, tempted to go abroad to find scope for their talents. On the other hand, it produces swarms of ill-educated persons who find it difficult to get absorbed into the national economy. This system, divorced as it is from ethical instruction and precept, develops a parasitical culture gapingly distinct from the *vrata pradhana* system of *Gurukula* education obtaining in ancient India. Several eminent educationists have condemned it as anti-education and it shall remain so unless ethical values are inculcated during the formative years and are made part of the curriculum. In a conference of Education Ministers, the then Prime Minister stressed the necessity of including the moral aspect of life within its scope, and deplored the absence of prizes for outstanding virtues like truth, fearlessness and selfless service.

For the last 4 decades, we have been talking parrot-like of vocationalising our system of education. But the situation is little better than it was at the advent of Independence and the future prospects continue to be shrouded in pious articulation. Pathetically, we seem to believe that articulation is accomplishment.

Gandhiji, it may be recalled, laid great emphasis on inculcating the spirit of self-reliance, self-restraint

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and bread-labour. This was the basis of his concept of *Nai Talim* but his ideas were interred with his assassination. Now that the Government is inclined to re-examine Gandhian values, it may be worthwhile to recapitulate his concept of education. Briefly, the Gandhian scheme of education was based on the following 4 main postulates:

(1) that elementary education should be made *free, compulsory* and *universal*;

(2) that it should not be perfunctory and cut short at the end of four years;

(3) that it should be given through the mother-tongue; and

(4) that it should be imparted primarily through crafts like weaving and spinning and not through books only so that the children may produce articles that are marketable and these should be sold to make education self-supporting.

But what is the reality on the ground? Compulsory and universal elementary education is yet far far away on the horizon, notably in the female segment, which constitutes half of the target group. Generally, it is perfunctory for not many schools have the full complement of teachers, particularly so in the villages and teaching aids and other facilities are woefully missing. The drop-out rate is alarming and, in turn, this tends to aggravate the problem of adult illiteracy. The concept of teaching through crafts was still-born.

As for the medium of instruction, it continues to be English in our model/public schools. As a result, a sense of inferiority complex is seeded in the young minds, from the very beginning. In view of job opportunities lying open to persons with knowledge of English, parents understandably desire their children to go to English medium schools and, as is common knowledge, "the craze is now spreading to rural areas as well"; and the educational institutions using mother tongues as media are rated second class, meant for "other people's" children.

Stratified as we are by an outdated caste system, wide economic disparities and the legacy of a feudal past, the children belonging to the affluent classes stand poles apart from the mass of under-privileged children. Snobbery and a feeling of *oonch-neech* are the natural products of this social segregation which inevitably leads to alienation between those who shall occupy leadership positions in days to come, and the common folk. In the land of Krishna, the legendary story of Sudama assumes the character of a farce.

Indian educationists are not unaware of this distortion. The University Grants Commission had, in an earlier communication, recommended that half of the seats in affluent public schools should be reserved for poor and talented students. It had suggested that schools run by private institutions and charging high fees should be made more egalitarian.

Similarly, the Kothari Commission had recommended the growth of "neighbourhood" schools. Surely, these were moves in the right direction. But what has been the response? It is obvious that something more than mere exhortation is needed to make the educational system fulfil its social role in the national striving towards a Democratic society, viz., an egalitarian ethos and a sense of social commitment.

Towards a New Social Order

The concept of education and hence of educational institutions has undergone a sea change in recent years. Education is no more limited to the building up of knowledge and skills of the pupils but also their social ethos and hence educational institutions can no longer continue to exist in cloisters.

As the Gajendragadkar Committee report on Governance of Universities says, University education has a manifold function to discharge. Pursuit of excellence in knowledge and advancement of knowledge have been the main functions of university education so far. This approach, however is no longer adequate in the context of rapid national development and social change. The function of a university today is not only to enable students to attain excellence in knowledge, but also to contribute directly to national development, to furnish intellectual and moral leadership to the community at large. Today when our nation is struggling to march towards the establishment of an egalitarian society, based on political and economic justice and social equality, university education can no longer remain a passive spectator. The task of creating a new social order which has assumed paramount importance today cannot be overlooked by the university community. Thus the goal of university education has a dual character; firstly, the pursuit of knowledge and the attainment of excellence in different disciplines, and secondly, the development of a sense of ethos which makes the university community conscious of its obligations to the community at large of which it is an mportant segment. Thus, education now has to have social concerns as well—for the employment of the youth, for the value system to be inculcated keeping in view the ideals of secularism, democracy, socialism and national integration as enshrined in our Constitution. Students and institutions are to be involved in study, work and services related to national development—which has come to be called the third dimension of education—extension. Research and creative activities of the students and institutions are also to be channelised for tackling specific problem of regional and national development.

Learning Facilities

As observed in the report of the Committee to enquire into the working of the Central Universities, it is now widely accepted that a university exists primarily for its students and scholars and through them and their work for the society at large. It provides them learning opportunities in a variety of ways through teachers in the classrooms, books in the libraries and experimental facilities in the field or in the laboratories; through interaction with other students in seminars, tutorials, group project or in numerous other fora and activities based in hostels, and through clubs and associations. An important source of learning in actual experiencing of social and environmental realities, first hand investigation of phenomena and situations, and actual participation in activities of a creative and developmental nature. The universities should, therefore, have facilities, structures, management and above all, programmes available in sufficient variety so that each student could learn according to his inclination, aptitude and need. It is only thus that the student could get the best out of the university and the nation could get sustenance from its human resource.

Thus what is needed is the availability of a large variety of courses meant to prepare students for numerous technical, scientific, medical, commercial, cultural, sports and other professions. Introduction of community activity with appropriate logistic support and academic credit also calls for immediate attention. Methods to teaching, therefore, have to include those which require active involvement of students in tutorials, seminars, projects, field work and the like, including writing of technical reports or term papers and short dissertations. Evaluation system has also to change correspondingly so as to be based on the assignments and activities carried out by students and the quality of effort made by them. This can be done, obviously, only by teachers taking part in the process, of course, with due checks and safeguards.

Admission

In order that the universities may retain their all-India character, it would be necessary to allot a number of seats in every university to the various State Governments in the country. In an ideal situation not less than 25% seats should be reserved for students from other states. The bigger States may be given larger representation in the undergraduate course than the smaller states. These seats may be filled on the basis of an all-India Merit Examination which may be conducted by the Association of Indian Universities/UGC. Seats may also be reserved for candidates from SC & ST classes, physically handicapped and ex-servicemen, in accordance with the policy of the Government. Similarly, a certain percentage of seats may be reserved for those who have distinguished themselves in sports and cultural activities.

Discipline

For any organisation to run smoothly, observance of discipline is of paramount importance. Of course, the best form of discipline is self-discipline. It stems from the adage *Sanyam hi Jiwan Hai* (verily, self-restraint is life). This is founded in the practice of *Yamas*, *niyamas*, *aasanas* and *praanaayaama*, which are considered to be the first steps to *yoga*. There are 5 *yamas*, which are rules of social conduct; these are : *Satya*, (Truth), *Ahimsa* (non-violence), *Brahamcharya* (Celibacy), *Aparigraha* (Non-possession), and *Asteya* (non-theft). There are 5 *niyamas* which are rules of personal conduct; these are : Shaucha (Cleanliness), *Tapas* (Austerity), *Santosha* (Contentment), *Swaadyhyaaya* (Self-study), *Ishapranidhaana* (Self surrender). *Aaasanas* are postures, physical exercises. Conducted with *Praanaayaama* (breath control), they do immense good to the psychosomatic system as vouched by practitioners. Practised together with meditation, these have an incalculable educative influence on the person of an individual and lead to the growth of a balanced, well adjusted, vigorous, vital personality. It is desirable that appropriate facilities are made available at university centres for these exercises.

A university community consists of three main components : the teachers, the students and the karmacharis. The primary responsibility for maintenance of discipline devolves on the teachers. It is axiomatic to say that no university can rise above the standard of its teachers. While full freedom of expression and association must be guaranteed for the teachers as for other citizens, steps should be taken to guard against irresponsible behaviour and actions detrimental to the discharge of duties which may be briefly catalogued asunder :

(a) A teacher shall engage classes regularly and punctually and impart lessons so as to maintain and strengthen standards of academic excellence. His academic duties shall include guidance and instruction to students in the form of tutorials/seminars/practicals and assessment/examination/evaluation, and work assigned to him by competent authorities of the institution. He shall not ordinarily remain absent from duty without prior permission or grant of leave. He shall, however, make surrogate arrangements in case he is obliged to be absent from duty for some reason.

(b) A teacher shall help the college/university authorities in enforcing and maintaining discipline among the students.

(c) A teacher shall participate fully and enthusiastically in the corporate life of the institution and shall perform such other co-curricular and extra-curricular duties related to the institution as may be assigned to him from time to time by competent authorities of the college/university.

While it is the duty of the teachers to teach, it is the duty of the students to learn and maintain discipline. If a student is not interested in learning, there should be no compunction in striking his name off the scholars' register for he no longer answers to the designation of a student-scholar.

After all, higher education is a privilege, which should accrue only to those who are committed and are prepared to undergo the required *tapas* and *yoga* for it.

Thus, here are a few activities the perpetration of which would construe indiscipline on the part of a student-scholar (or a karmachari) :

(a) To disrupt teaching, study, research or administrative work, or prevent any member of the university and its staff from carrying on his duty, or do any act reasonably likely to cause such disruption or prevention.

(b) To damage or deface any property of the University or do any act reasonably likely to cause such damage or defacing; and

(c) To engage in any conduct which is, or is reasonably likely to be, detrimental to the University's purposes.

The third group which comprises the university community is the non-teaching staff. They provide the supportive services which go to maintain the university system and may, therefore, be counted amongst essential services; and an equally serious note should be taken of their default. They should also be held liable if they indulge in practices which construe indiscipline on the part of the student-scholars.

However, it may be appreciated that their unresolved grievances generally lead to disturbance on the campus. These usually relate to :

(a) lack of opportunities for promotions;
(b) lack of housing amenities;
(c) lack of medical facilities;
(d) disparities in pay scales.

The university should, therefore, build up a Grievances Removal system to cover all the three segments of the university community, in which peer groups may also be involved so that the grievances of the teachers, students or staff are not allowed to accumulate.

There should be provision for one appeal inherent in the system.

The Pro-Vice-Chancellor should be appointed as the Chief Proctor and the Head of the Removal of Grievances system, with the required number of assistants. He should keep an overall watch on the conduct of the students and the employees both on the campus and off it. It would be desirable to have a uniform which the students may wear (with pride) while going off the campus. They should be given identity cards with their photographs to be carried on their persons while going outside campus. The university may also organise its own watch and ward arrangement in which the students of the NCC should be involved, besides technical personnel to be borrowed from the State Government.

Corporate life in the University

The University being a community of teachers and students, one of its important functions, besides the cultivation of intellect and providing adequate facilities for this purpose, is to promote the all-round development of the students' personality. It is known that an individual's success in life and his contribution to society are not dependent merely on cognitive development but far more on a harmonious combination of the cognitive, the affective, and the development of ual and social skills. Thus the classroom is not exclusive focus of learning and there is a very portant role for corporate life in the universities. cilities for corporate life, therefore, serve a singular ucational purpose and cannot be taken merely as nenities for students. It is essential that initiative this respect is taken by the university administraon, teachers as well as student associations. In a iversity, teachers are expected to be the natural aders and guides of the student community. This n be attained through the organisation of games and orts, debates, discussions, symposia, study circles nd other social and cultural activities. It would, erefore, be desirable to :

(a) encourage sports and games;
(b) support drama and film-clubs, cultural activities, and hobby centres;
(c) encourage institution of evening diploma courses in different technical, scientific and literary fields so that regular students in the faculties may add to their knowledge and skills;
(d) participation in adult education and other extension activities.

It may be ensured that *all* students participate in ne or the other activity. There should be effective articipation of students in the organisation of these rogrammes through appropriate committees. Teachers hould not only encourage but guide students in hese activities.

Faculty Advisors

When a student enters the portals of a university at the adolescent stage of his life, he is full of the spirit of adventure and entertains great hopes as well as fears. This is the time when he needs guidance from sympathetic teachers. If this is not forth-coming, he leans on other shoulders, scrupulous or not so scrupulous. Thus if he falls in the clutches of unscrupulous persons, this shall act as a detrimental factor in character formation and may well become the source of his undoing. In Sanskrit, a student is called a *chhaatra* as he is supposed to be under the umbrella of the teacher (*guru*). This umbrella has to be provided in full measure by the teachers who are expected to protect the students from all inclemencies of physical or social weather and all juvenile storms. It would, therefore, be advisable to place each student under the care of a Faculty Advisor or a GURU who may act as his local guardian from the very outset. This teacher should be responsible for the guidance of the student under his charge throughout the period the student remains at the university. He should watch the student's growth as a friend and philosopher and try to solve his difficulties—financial, physical, psychological, social, etc. He should also remain in touch with the parents of the student. In the age of computers, it should not be difficult to maintain his track record and plan the course of his growth according to his aptitude.

Under this scheme, it would be desirable to assign a group of 15 to 20 students to each teacher-tutor for occasional meetings, preferably where the teacher resides, and for discussing all kinds of matters under the Sun—academic as well as social, political and personal. This would provide the student with a sense of security and go a long way in developing his personality and attitudes. So that the teachers can fulfil the above obligations, which are, no doubt, considerable, satisfactorily, it will be necessary to run orientation/refresher courses for them covering youth psychology, group management, teaching methods, preparation of teaching materials, evaluation procedure, etc.

The onerous work involved in the seminars, tutorials, workshops and field work would require on the part of teachers greater attention and earnestness than the work involved in mere lecturing as at present. This work should be duly taken into consideration while assessing the performance of the teacher. The concept of teaching merely by lecturing should be replaced by the dictum that teaching is synonymous with learning and, therefore, a lesson not learnt cannot be deemed to have been taught.

Democratic Decentralization

As far the involvement of the people which appropriately is considered to be important for the successful implementation of the programmes like elementary education (including non-formal education), early childhood care and education (ECCE), adult education, education of the disabled, etc, the Programme of Action document proposes to hold consultation with the grassroot level voluntary agencies and social activitist groups to evolve concrete programmes. This proposal appears to me like riding a limping horse.

Under the guidance of the late Dr. J.P. Naik, Citizens for Democracy prepared a policy frame for the development of education (1978-87), and published it under the title 'Education for our People'. It carried a foreward by Lok Nayak Jaya Prakash Narain. Considering the primacy of work at the grassroot level, it laid great emphasis on the creation of "living education cells" in the local communities. It was noted that work at this level, and particularly in rural areas, was extremely important. It was, therefore, recommended that every encouragement should be given to young and dedicated persons who were committed to this programme and proposed to take it up as their life-mission. It was felt that when this work was developed adequately new ideas might be ganerated to give new directions to policy. "Let us not forget that the educational revolution we need cannot begin in Delhi and spread to the villages. The probability that it may begin in villages and ultimately reach Delhi is far greater", said the document in a pious strain.

We are well beyond the end of the 10 years' period for which this "revolutionary" programme was formulated. The authors of this report had felt the need for organising mass movement to bring pressure on the government to play its due role in the education of the people. They had visualized the necessity of a big reform movement to be started, simultaneously within and without the system and well-planned and coordinated programmes to be developed in which workers within the education system as well as social and political workers would effectively participate. "The entire ethos of the system needs to be radically transformed to create a climate of sustained hard work and dedication," they said. Here we are at the end of the stipulated period and find the educational scenario as bleak as ever, with 2/3rd of our population being illiterate and vast segments of the so-called literates cast under the shadow of dogma, superstitions, fundamentalism, communal virus. Women-burning, female infanticide, untouchability, caste wars are the games that we merrily play as we march towards the 21st century, under the facile alibi of non-interference in religious practices by the State.

The recent tragic incident of Sati at Deorala and the storm created by the entry of a Harijan at the Nathdwara temple in Rajasthan is a measure of the magnitude of the work that remains to be done for building up a progressive society and a strong state capable of curbing the deeply entrenched forces of degradation operating against the vulnerable sections of society.

These are not merely administrative problems. These are basically educational problems which have to be tackled at the school/community level. Thus the education system, whether formal or non-formal, has to be given all the support institutionally, financially and socially, to meet this challenge so that it may deliver the goods.

The root cause of this continuing weakness is that we have not given due importance to the growth of village level government. Mahatma Gandhi had envisioned a system of *Gram Swaraj* (Village Self-Government) under which each village was to be a self-governing republic "In this structure composed of innumerable villages, there will be ever-widening, never-ascending circles. Life will not be a pyramid, with the apex sustained by the bottom. But it will be an oceanic circle", as he graphically put it. As a gesture of respect to Gandhiji the framers of the Constitution agreed to add Article 40 in the Directive Principles of the State Policy, stating that the State shall take steps to organise village Panchayats and endow them with such powers and authority as may be necessary to enable them to function as units of self-government.

In pursuance of this, Jawaharlal Nehru, a thorough-bred democrat by persuasion and conviction, as he was, sought to introduce Panchayati Raj at the historic convention held at Nagaur (Rajasthan) in 1959, but he did not live long enough to give it the necessary sustenance, with the result that the lamp of Panchayati Raj burnt dim and barely survived his death. It suffered from two serious lacks. First, elections were not held regularly which prevented the growth of accountability and induction of fresh blood; second, adequate financial resources were not made available to Panchayati Raj Institutions. So they became anaemic. In course of time, Ashoka Mehta Committee was appointed to suggest ways and means for resuscitation of the process of democratic decentralisation; and it did come forth with a model bill, but the Government of the day developed cold feet, and the report was consigned to the limbo of oblivion.

The Prime Minister has now asked the states to hold elections to Panchayati Raj Institutions as soon as possible. What one fails to understand is why no steps are being taken to suitably amend the Constitution so as to introduce Panchayati Raj as the third tier of Government at the grassroot level in pursuit of Article 40 of the Constitution and thus to redeem the pledge of Gandhiji and Nehru. At one stroke, this should generate a mass movement for the resurgence of village loyalty and eradication of illiteracy and poverty and may hopefully culminate into a surge for social awareness and national integration. In fact, this action is urgently called for creating a new social order based on participatory, co-operative, egalitarian democracy.

Continuing Education

Any finally it may be remembered that education is a continuing process as Will Durant expressed so beautifully when he said : "In my youth, I stressed freedom, and in my old age (79 years), I stress order. I have made the great discovery that freedom and liberty is a product of order. When I was 19, I knew everything and my father knew nothing. When I was 29 I was surprised how much my father had learned in the last 10 years. Now at 79, I know nothing ! So education is nothing more than a progressive discovery of our own ignorance." ☐

Why Public Expenditure on Higher Education?

K. K. Balachander*

After World War II, many countries began to lace greater emphasis on raising the educational evel of their people because of the realisation that ducation was the most powerful instrument of conomic progress and social transformation. It was o longer considered a private concern of individuals r parents; it came to be accepted as a collective esponsibility of the community. There was also a eneral agreement that the planning, financing and evelopment of higher education should not be left xclusively in the hands of the private agencies/bodies. he absence of Government support, it was thought, would lead to a severe contraction in the supply of igher education.

The principle that Government should assume an mportant role in the financial support of higher education, directly or indirectly, has been firmly stablished over the years in many countries, especially n developing ones—although there still exists disagreement upon the extent to which this provision should e made. Consequently, there has been a rapid rise in public expenditure on higher education; the increase has been more pronounced from late fifties when economic thought brought into focus (again) the investment aspect of education.

The devising of appropriate methods of financing higher education was treated as a 'second-order' problem in the early discussions on the role of higher education. Enough attention had not been paid to the down-to-earth problems of how to share the growing higher educational expenditures between the Government (or the tax-payers) and the students/parents. During the last few years, there has been considerable discussion, mainly among economists, about the pattern of financing education at higher levels. In this context, a historical review of the reasons for Government action in the provision of higher education is appropriate.

Various economic, social and political arguments have been put forward to justify public intervention and expenditure in the higher education field. The greatest hardship which educational researchers operate under is the lack of a clear specification of the exact reasons for providing public finance to higher education. An attempt has, therefore, been made to set out below some of the reasons, both social and economic, that are found generally acceptable in many societies for Government intervention. The discussions will be confined to the 'need' for State intervention (and expenditure) of some sort, or in other words, why Governments should provide any subsidy at all for higher education, and not with the 'size' or 'extent' of it.

II

ARGUMENTS FOR PUBLIC INTERVENTION

1. Disadvantages of Market Forces

In a competitive system that government is the best which governs the least. The market mechanism—or the 'invisible hand'—can be expected to ensure optimal allocation of resources if certain conditions such as freedom of choice, competition, profit maximisation, perfect knowledge on the part of the consumers and producers, absence of 'externalities' etc., are satisfied. Insofar as the purpose of such a system is to facilitate individual decision making, the function of the State is limited, it being confined only to specify and enforce the rights of the citizens rather than to circumscribe them. Under this system, higher educational facilities will be provided by the private enterprise, and parents/individuals can be trusted to take decisions about the education that they want for their children/for themselves.

There are several reasons why the provision of higher education cannot be left to the market forces and why government intervention is needed :

(a) There will be a divergence between the present and future valuations of goods, e.g. some individuals may place a relatively higher value on the benefits arising from the present utilisation of goods rather than future goods which have uncertain returns. Individuals suffer from defective telescopic faculty, as Pigou puts it. Financial benefits from higher education are remote in time and have a probability dimension. The parents/individuals, if left to themselves, may be poor judges of their long

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term interests. The family has manifest deficiencies as a decision maker in this area, and it is plausible to expect also some correlation between the extent of these deficiencies and the amount of education received by parents. The government may not be able to compel the people, but it may at least be able to shape their attitude towards higher education. The government can also keep the people fully informed about the long term benefits that they can obtain from higher education.

(b) Another reason for public concern is the **inability** of individuals/parents to finance higher education. If higher education is treated as an activity of purely personal concern, the parents/indlviduals will be expected to pay the full cost of it, and the lower income families/individuals may not be able to take advantage of it. Thus, in a competitive system, higher educational institutions/establishments will have a natural tendency to be biased against the lower strata of society, and this will raise serious problems of equity. The whole system may, therefore, get dominated by upper class values, thus reflecting class differences. Besides, in a poor family, the pressure upon the individual to augment family income, foregoing investment in his own education, may be enormous. Government intervention can ensure that no student potentially capable to benefit from higher education is excluded by lack of finance or for any other reason. Philanthropic acts of various individuals/organisations/trusts might help students or institutions, but it is likely that the bulk of such help will go to producers (higher educational institutions) directly rather than to consumers (students) who may be poor as the objective of such philanthropy is to foster or promote the activity rather than encourage some individuals.

(c) The private enterprise, which is motivated by quicker monetary profits, may not naturally, by itself, take interest or initiative in investment in education as a whole which has become more lumpy, and is characterised by fairly long gestation period than many other types of capital formation. The Government is better placed in this respect as it will take a long term view and can come forward with needed funds.

(d) Since the market tends to be imperfect, provision of higher education may get concentrated in a few hands, and there will be only limited number of institutions. The problem of local monopolies may, therefore, arise. I the type of competition that arises is imperfec in nature, the price of educational servic may also rise. The possibility of thes monopolistic tendencies in the provision c higher education may thus constitute anothe strong reason for public intervention as in th case of any other goods or services. In certai areas, the Government can break up discriminatory monopolistic situations controlle by private bodies/foundations by subsidisin new initiatives in that areas.

(e) Many economists talk of education as a 'industry' and have attempted to apply to it th tools of analysis of the industry such as th concept of unit cost, efficiency, productivity waste, etc. According to Coombs and Hallak the widely held promise that because education is not sold in an open market and does no have a profit and loss statement like a commercial business, it is thereby exempt from the principles of efficiency, cost consciousness planning, etc., is wrong. Even though cos analysis is a relative new comer to most educational systems, abundant evidence of its practical value is already available from recen experience in a variety of countries. The siz (in terms of enrolment) of a higher educationa institution, especially, is considered as an important factor in determining the (institutional cost per student; there is a minimum size below which each type of institution cannot operate economically. Besides, as the institutions are not all similar in their coverage and objectives such differences will affect the desirable size of the institutions concerned and may carry with them different requirements of staff, students, library and laboratory facilities equipment, etc. There must be a minimum of infrastructural facilities (different for each type of institution) if good standards are to be established. All these factors have to be taken into account by those who are responsible for policy in the higher education sector.

If like firms/industries, higher educational institutions are assumed to be enjoying economies of scale, as the size (enrolment) grows, average costs begin to decline till the facilities originally created are fully utilised. In other words, higher educational institutions can exploit economies of scale upto a certain size. Expansion in enrolment can he expected to be associated with a continuing reduction in institutional cost per student until this optimum point is reached. If the institution is sub-optimal in terms of enrolment, it suggests that the unit cost is likely to be high, and that there is still scope for enrolment. Thus what may be expensive on a small-scale may be economically feasible on a large scale. There may be a U-shaped cost curve operating in higher educational institutions too like firms/industries.

Public intervention may have implications for the economic efficiency of higher educational institutions through their effect on enrolment. If Government grants can sufficiently stimulate enrolment in sub-optimum institutions, then they could contribute positively to economic efficiency. Private sources of finance are severely limited and may not be able to make (alone) a positive contribution towards increasing the efficiency of institutions by improvement in the above direction, and creating a more congenial atmosphere for balanced development of all institutions. When Government assistance is made explicit to those who are responsible for running the institutions, they can plan future activities well in advance. Once the infrastructure is brought into being, the Government can insist that it is used as near to full capacity as possible. Besides, as ultimately the public has to bear to some extent the cost of wrong decisions, the Government may naturally go into the whole issue of locating higher educational institutions from the angle of availability of students and economic viability.

f) Maximisation of profit is the basic motive guiding decisions in industry/firm wherein the problem of 'externalities' does not exist. Since higher education benefits not only the individual recipient but also the community as a whole, the application of the market principle in its investment decisions becomes difficult. Although the benefits that the society derives from a well educated populace are difficult to quantity, they are nevertheless important. Individuals/families/private enterprise, if left to themselves, may demand or provide less education than its economic-social value to the society; hence it will be underproduced (or will be less than optimum) in the absence of Government intervention. This issue of societal (public) benefits is discussed more elaborately below.

2. Societal (Public) Benefits of Higher Education

Higher education confers not only **direct** benefits upon individuals/families (such as higher life-time earnings, opportunities to obtain still further (continuous) education, great physical and mental dexterity, greater willingness to take risks and launch out into new enterprises or new jobs, more chances to accumulation of capital, hedging against the vicissitudes of technological change, increased mobility, enjoyment of education **per se**, etc.), but also **indirect** external benefits on the society as a whole which take diverse forms. Because of the existence of these societal benefits and their special characteristics, decisions about higher education provision cannot be left to decisions of private individuals or groups or enterprise; the role which the private sector alone can play in meeting the above needs is very limited.

The literature dealing with the societal (community) benefits, their nature and their implications, is extensive. Weisbrod has classified them into three categories : (i) residence related benefits, (ii) employment related benefits, and (iii) benefits to the rest of the society. The residence related benefits can be identified mainly with school education. The employment related benefits state that the higher education of some employees will raise the productivity of others. The importance of this effect, as O'Donoghue observes, depends on higher education developing the properties of flexibility and adaptability since it is these qualities which rebound to the advantages of other employees in cases where production involves the cooperative effort of a group. The employers too benefit from the education of their employees as it would be difficult and expensive for the former if they had to work with an illiterate and untrained labour force or had to train and educate them.

The third category of effects on society—and this is the most important and relevant to higher education—refers to the beneficial effects that 'research' activities may have on the productivity of workers. These activities are a means of increasing the output per worker, whether they are achieved through introduction of new products, new production methods or through more indirect measures such as improvements in health or working conditions. The case for research, which is associated with higher education, needs to be discussed perhaps in greater detail as it provides a strong argument for Government assistance to higher education, especially in the cases of universities and research institutions.

The Contribution of Research

The technological gap between different parts of the world is wider now than it was before and late comers are in a hurry to catch up with the advanced nations. The refinement of knowledge is a continuous process particularly in the sphere of technical education. Special safeguards have, therefore, to be taken against obsolescence in information and technology. No country has a chance of entering the modern technological world without research and development (R & D), organised on a large scale. Fundamental or basic research (apart from applied and adaptive research), by its very definition, is an input for further research. The demand for continuing research of such a type is bound to grow. As Vaizey has observed : "The rate at which new ideas and new techniques of production can be embodied in physical capital determines the rate at which the economy as a whole can advance. This then is one clear contribution which is made by education to economic development, because it is from higher education, and from research establishments, that new ideas and techniques flow". Research and development activities have many links with higher education; they are inextricably intertwined as Marshall's 'knife-blade and handle'-perfectly complementary. Traditionally, the tendency had been to regard inventions as something which were the fruits of creative genius. It is now realised that much of the research is the outcome of team work, the great bulk of which being carried on in universities and research institutions.

Fundamental or basic research, having no immediate pay-off, has to be supported either by the Government, or by private enterprise. But the latter, motivated by immediate profit, may tend to invest too little on it. Besides, the conducting of it involves a high cost. As the benefits of such research to society are so large, reliance only on private enterprise may be undesirable; its provision may tend to be below the socially optimal levels. It is only proper then that the Government should play a major role in organising and financing research as it is better placed in this matter and can take a longer term view in the interest of the community.

Research oriented universities are among the major contributors to the advancement of knowledge. They not only play the role of providing a continuous flow of research results, but also supply the highly skilled personnel needed for R & D activities in other sectors. These institutions can be a convenient mechanism for discovering and cultivating potential talent, and at the same time provide a congenial atmosphere for conducting research in those areas that will foster civil cultural, technical and scientific progress. Their rol has also been more important because of the complementarity between teaching and research. Th scientific achievements of many advanced nations hav been made possible following the restoration of thei universities as centres of research and training. Th Governments of these countries had extended, an continue to extend, liberal financial assistance t higher educational institutions like universities (an research institutions) to conduct research in many disciplines including humanities. Instead of dependen just on fee and other private contributions, a university getting Government assistance is clearly in a much better position to advance research.

The Equity Aspect

Two other leading societal benefits—equality o opportunity and improved income distribution—tha can be expected from higher education need som elucidation. These two issues have become prominen in recent discussions and there is an examination anew of the same in the changed circumstance compared with earlier times in many countries. These are seen as two important components of 'rights' and 'rewards' which comprise life chances in any society, and have been recognised as the two main justifications for Government intervention in the higher educational sector. The main objective of this egalitarian thrust of higher education is that the less-advantaged social groups should have equal access to higher educational institutions. The hope is that these groups would then enjoy readier access to the more rewarding (and rewarded) upper rungs of society which previously had been predominantly the preserve of their more privileged contemporaries. The longer higher education continues to be the privilege of the few, it is argued, the longer it will be before it could be the 'wellspring of development for the nation as a whole. It is not enough to create the top; opportunities should be open for everybody with ability to reach the top.

(a) Equality of Opportunity

Equalising opportunity for higher education is considered as one of the examples of 'spill-over' effects made possible by large public expenditures on higher education. The concept crops up in almost all discussions in financing of higher education now. Theoretically, as Marshall has pointed out, one starts here from the assumption that every individual is a lidate for every position in society, so that public cy must aim at eliminating the effects of differing al environments on the critical turning points in ole's lives. In other words, the Welfare State aims equalising its citizens' life-chances, freeing the ural order of human differences from the arbitrary uence of differing social environments. The ctical implications are of course vast. The ability rofit by higher education is spread over all classes people; hence all the aspirants must be enabled to ib the educational ladder (and in all regions). If ded, latent or slow development talent must also ostered and brought to fruition so that all are tched to the maximum of their potential.

That no individual, whatever be his economic and ial status, sex and rural-urban differentiation, hing to have higher education should be denied the portunity is the avowed goal of the educational icy makers in all countries, especially the develop- ones. Greater efforts, therefore, must be made to ist the socio-economically backward sections of the pulation in higher education and thus attain equity economic opportunities over time. If we go back o history, we can find that the development of gher education tended to be justified in terms of the ovision of what was called a liberal education for 'elite' than in terms of training for careers. gher education proved more attractive later when was known that if pursued, it would be directly or directly of some advantage in getting employment building careers. This as well as the wind of alitarian spirit that was blowing all over the world ifted the emphasis in favour of democratisation of gher education.

Inter-State and Inter-Regional Equality : Equality opportunity will not be meaningful if there are nequal higher educational facilities in different states/ gions in a country. The access to higher education ould be enjoyed by prospective participants in all arts of the country equally. If large distance in this gard exists between states and regions, there would a sense of discontent. As educational development ads to economic improvement of the states/regions o, disparity in its spread may result in economic isparity in the long run. In a federal system, these iscrepancies are likely to be wider. The revenue in ne state/region may not be sufficient as its tax- apacity will be limited. These differences in fiscal apacity should not act as barriers to the achievement f uniform levels of higher educational services any- here in the country. The people in less higher ducationally advanced states themselves may bring pressure on their governments to provide better higher educational services, and the example of the more advanced states in this regard may have provided rising expectations among them. Besides, the fact that higher education is being increasingly considered as a 'right' may prevent the State authorities from raising substantially the student charges to meet escalating costs. The costs that have to be met by the States through their general revenues may therefore be heavier. As a consequence of all this, there is likely to be increased demand for aid from the national government (which may be appropriating most of country's revenues) by the states. The former may have to step in with additional aid, or other means, to help them accomplish their task which would also encourage or facilitate a far larger total expenditure by many states. If inter-state equality in higher educational spread and expenditure has to be achieved, the Government (at the national level) should have a clear idea of the present state of higher educational development in different regions, and their conflicting interests and difficulties. It may be necessary to have a differential system of Central financial aid to prevent the occurrence of wider disparities with regard to provision of higher educational services, standards and expenditure between rich and poor states. Without Government effort (Central and State), particularly the former, it will be difficult to equalise higher educational opportunities all over the country.

(b) Improved Income Distribution

The desire for equality of opportunity ultimately leads to the income redistributive effects of higher education. In a modern society, higher education appears to be one of the most powerful ways of reducing or avoiding the growth of income and wealth disparities. The belief that advancement in higher education has important implications for the distribution of income is widely held; as mentioned earlier, the more educated and skilled a person is, the greater the chances of enhancing his earning capacity.

If higher education is priced to the public at its full cost, as it would be in the absence of any public expenditure, it is argued that only those who can afford will buy it, thus leading to its unequal distribution in the society in course of time. The stability of the society will be disturbed if it consists of people who are educated and rich and whose riches go on rising, and a large portion of poor who have no education and continue to be poor. The income redistributive effects of higher education provide the rationale not only for keeping its accessss open, but also extending government subsidy. (There need not however be a blanket policy of Government subsidy as far as higher education is concerned, in which case there may be a decrease in the contribution from all students irrespective of the economic background).

Whether public expenditure on higher education will lead to improved income distribution also depends on ensuring that public expenditures or subsidised tuition fees attract sufficient number of people from the lower-income groups, who, as a result of their higher education, will earn higher incomes. For social and economic reasons, many intended beneficiaries may be apathetic towards the higher education provided, or not consider it worth the opportunity costs involved. **Just extending educational opportunities with equal sized subsidy, especially in a world of unequal incomes may not contribute to improve the distribution of income.** In other words, this form of Government assistance given on the sole criterion of attendance in a higher educational institution would mean that for some students, the subsidy represents money they or their parents could afford to spend; for others, it will be found to be inadequate, and thus preventing them to take advantage of educational opportunities. Students from the lower strata may, therefore, be able to take advantage of higher education only if some really positive discrimination in their favour is extended by the Government.

Other Societal (Community) Benefits

Another benefit which is considered to be accruing from education in general, and higher education in particular, is the spread of 'information' which is valuable for a political democracy. Without higher education, the value of books, journals, newspapers and similnr information media would dwindle. This effect assumes special importance in view of the explosion in knowledge which has now become a fact of life. Becker refers to the social gain of direct taxes paid by individuals from the additional income associated with education. Mobility among the people is one of the powerful means for the creation of an open society with a continuous interchange of scholars, teachers, professional and skilled personnel. Higher education provided for the people of each local community benefits the country at large because of the mobility of those who are thus educated. It has recently been found that countries which make higher investment on post-secondary education, particularly with agricultural and technical specialisation, can achieve certain comparative trade advantages. Another leading argument for the Government ta more interest in higher education is that educati attainment has an influence on family limitation. virtue of education had long ago been highlig by Ricardo, Malthus and Senior. Higher educa brings with it an enhanced sophistication regar biological processes and knowledge of methods th gh which excessive growth of population (whic typical of countries at the low-end, and at the mi of the development spectrum) can be checked. S ral cross-sectional studies using either national or national populations have demonstrated an inv relationship between education and fertility (altho there are some exceptions and caveats to this ger finding). According to these studies, an illiterat barely literate individual tends to be more fertile those who are exposed to higher levels of educat In accordance with educational advance the rel value of child declines and the child-spacing incre This happens because higher education delays marriage of both men and women by increasing chances for paid employment. It also reorients fa members to discover non-familial and desirable such as further studies, professional recogni higher occupational status, power, income and sc which act in turn as a check to birth-rate. Thus argued that if a country desires to reduce popul explosion, its Government should make all effor raising the educational level of the people, espec younger women and also of the less-privileged.

To sum up, the concept of 'external' or 'soci benefits is so pervasive and diffused that the li examples could be extended further. The natur the special characteristics of these benefits is how less often elucidated in a sufficiently precise ma for its implications for higher education policy. technical evidence adduced to support these prop tions is also not overwhelmingly persuasive. T cannot be captured in the rate of return calcula for which it is the 'real' effects (those which give to monetary consequences) that are relevant. though many of these **invisible** benefits defy mone valuation, to the extent they are believed signific they reinforce the argument for public action. there is scope for disagreement as to **how much** **what type** of intervention is optimal. The inadeq delineation of such benefits, prevents a quantifica which could be used as a basis for fixing student sidies, There is presently no precise way of arri at a **particular amount** which should be paid to student to reimburse him for the stream of so benefits he/she will be expected to generate.

The financing of higher education, thus, many perplexities due to these societal benefits, many of which 'extra-economic' (objectives) that are however considered significant. They are embarrassing to the economist, since thehries say little about them and he has few teconiques for measuring them. As Schultz has aptly summarised it :

> "When this box is opened (social benefits), we are in trouble. There is so little agreement on what the box contains. It is hard to distinguish between fact and measuring these benefits has been grossly neglected. No wonder that claims and counter-claims are the order of the day. **Most of us have a vested interest in higher education** which is hard on objectivity". (underline ours).

III

FINANCING OF HIGHER EDUCATJON THE PUBLIC-PRIVATE BALANCE

We have, in the earlier sections, discussed some of the major justifications for public expenditure on education. These discussions provide a convenient framework against which we can set out what may be in general the Government's view of the financing of higher education.

School education, especially at the elementary level, has been recognised as a fundamental right in almost all countries. The Government has taken over the responsibility of the costs on it. It has been made free and compulsory, and the extension of this facility is no longer questioned. Difficulties arise when it is extended to the higher education level. At the upper levels, the costs are many times more than school education, and will go on increasing as they expand. **The economic problem of how to distribute the costs at this level becomes therefore more urgent.**

As discussed earlier, higher education, though confers benefits on the individual (user), also benefits the society as a whole. If it is left to individuals and the market mechanism to provide the necessary resources, its provision would be less than optimum, or there would be underinvestment in higher education from the point of view of society. Secondly, there is the important question of distribution of higher educational opportunities. If higher education is a form of investment which results in higher lifetime earnings by individuals, then to give opportunities for it only to those who could afford to pay would mean preserving or aggravating the existing inequalities of income in the future. Every effort should be made to ensure that financial barriers do not prevent the poor but meritorious students from entering and completing higher education.

It becomes, therefore, necessary for the Government to play an important role in the financing (and development) of higher education, or **higher education merits some intervention by it**. It has to be provided at 'prices' that do not reflect the actual money spent on providing it. The incomes of thoso who have received a subsidised higher education can also later be raduced by taxation. This is an attempt of the community to achieve a lower price for 'externalities' or societal benefits. Thus, it is evident that financing of higher education involves a transfer of income from the rest of the community (which benefit indirectly) to those pursuing higher educatin, and a charge (fees) on the students, the direct beneficiaries. Its supply is, therefore, financed both by tax resources and fee resources. In practice, a 'mixed' system of higher educational financing consisting of a combination of government grants and private charges (fees)—a blend of public and private funds—has been in vogue in almost throughout the world (except in Communist bloc of countries and a few countries like say Japan and Philippines). This is considered the best arrangement in terms of equity and efficiency.

The crucial question still remains : what should be the relative **balance** between private and social benefits, and what level of public subsidy is necessary to ensure sufficient investment in higher education in view of the tangible and intangible benefits it produces for society ? Any kind of cost sharing arrangement between the tax payers and the consumers of higher educational services can be devised. A decision concerning the 'exact' (proportion of) sharing of the expenditure between the Government and the individuals/families, or determining the size of the subsidy per student/institution, is perhaps a social-political one reflecting broadly the expected benefits of higher education (both societal and private) and partly on alternative uses of public funds, on relative priorities between higher education and lower levels of education, etc. These preferences may not be similar in all the countries; they may also change with time within a given country; and they may be different according to the level of education considered. Various countries have different patterns in respect of the 'balance' or the 'mix' of public and private contributions towards expenditure on higher education.

Anyway, in a situation of steady expansion of higher education, Government funds alone may be found inadequate. If revenue availability is the prime concern, then mixed financing in the form of feest, etc. and Government grants will generate more support by the society for higher educational development than either of the 'pure' systems. Besides, in a mixed (or multi source) system, apart from contributions made by Government and individual users, contributions towards expenditure may also flow from other sources (private)—by way of donations, endowments, gift, etc., made by voluntary bodies, trusts, private individuals, and so on.

There are many other advantages in this kind of mixed financing :

(i) This will ensure some freedom from State interference unlike in a Government-provided higher education system, and facilitate a more flexible attitude.

(ii) Government grants-in-aid may make sure that the expenditures are pushed far enough to take advantage of social benefits; since the individuals/families will share some expenditure by way of fees, this will minimise the tax-payers' resistance to public handouts to individuals/families.

(iii) It helps to raise not only larger resources, but the availability of these resources is less likely to get affected in times of financial stress because of the possibility of balancing shortfalls in one source by increased efforts under others.

(iv) With the initial thrust provided by the Government through grants-in-aid, the total higher educational efforts may get stimulated in the long run on account of the effect of higher education on national productivity and income and thence on the capacity to spend on higher education. Thus, there can be a particular type of multiplier (effect of educational expenditure on productivity and income) and accelerator (effect of increased income on additional higher educational expenditures) effect operating in such a planned system of higher education. This may be specially applicable in the case of developing countries (P.R. Panchamukhi).

(v) The wonderful effect of fee-income upon attention and energy would ensure a new level of academic performance on the part of the teachers as well as the students (In fact, the budgeting of fees was started in India during the British period as an expression of the principle that people do not value anything which is given free and that the payment of fees is an indication of seriousness of purpose on the part of the student or his guardian (Wood's Despatch 1854).

Conclusions

The debate on financing of higher education is no longer confined to the existence, but the desired extent of public subsidy, which, in turn, will determine the charges accruing to private persons. All the above arguments justify some form and level of public subsidy. While the economic approach to the problem limits itself to such broad alternatives as investing more or less on higher education, or desired types of higher education, the policy makers have to tackle the down-to-earth issue of deciding the amount of expenditure burden to be shared between the Government and the users.

Higher education serves two masters : the society at large and the incividual self. It is obligatory for both to see that the system is sustained over time. A suitable public finance package wherein the interests of, and gains to, the two parties are well-recognised and properly balanced should, therefore, have to be devised. This kind of a truce between the society and the individual beneficiaries could work reasonably well if both parties possess edequate information and behave with maturity. There has to be a realisation especially on the part of students, as well as the parents, that what they are undertaking is significant and important not only for themselves but also for the society, and that the effort made to carry out a programme of higher education has both its costs and its rewards. ☐

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New Technologies Vs Lecture Tradition in Higher Education

Beena Shah*

Eversince the industrial revolution began quickening the pace of technological advance, forecasts have appeared predicting a revolution in higher education that must surely transpire as a result of new technology (Entwistle, Odor & Anderson 1987). Yet the application of technology to university instruction has received only intermittent and nominal attention by university faculty and administration (Becker 1986, & Tucker 1985). In fact, the gap between actual and potential uses of the emerging technologies seems to be widening.

The expanding capacities and capabilities of computers and microprocessors alongwith a concomitant reduction in their cost of acquisition or access, the appearance of interactive cable television systems, the advances in fibre optics that offer higher quality and lower cost data transmission and tele-conferencing, and the staggering array of information technologies currently in place and projected; all of these developments have been receiving only slight attention among our institutions of higher learning; where these technologies have been examined were viewed as new dimensions of library services. While this attention is welcomed, it remains and application is still significantly removed from instruction in higher education. This article offers an explanation as to why the potential of the emerging technologies in college and university teaching has not been more widely exploited ?

Among the more common reasons cited for lack of progress in this area are prohibitive costs and faculty resistance to change. A closer examination suggests these factors to be symptomatic of more pervasive conditions and not root causes in themselves. It is the argument of this article that, by and large, the organisational attributes and dynamics of the college and university that have evolved since the late 1800s or early 1900s generally discourage innovative applications of new technologies in teaching. The degree to which the pervasiveness of these adverse conditions is understood is a necessary precondition to affect change in an institution.

The Lecture

The dominant instructional strategy used at higher education continues to be the lecture. Why, as we approach the close of the twentieth century ? Do universities continue to use a teaching technology that predates the invention of movable type nearly one half of millenium ago ? There are several explanations. First is simply a predictable resistance to any change (Sarason 1982). The Greeks objected to the introduction of writing into education because they thought it undercut the dialectic method. Any proposed change means some uncertainty, and resistance is an expected consequence. The questioning dimension of resistance, is the change valuable or worthwhile, is an important part of any innovation process ? it must be expected and accommodated.

A second reason that the lecture method continues to dominate in higher education is that until recently, technological alternatives had not been widely available or affordable. The early, expensive computers that filled rooms were not the realistic alternatives that today's microprocessors offer. However, unless this reason be given too much weightage, we should recall that the telephone has been available for a century and television for over 30 years—both are without widespread adoption in higher education.

A more fundamental reason for the lecture's preeminence lies in the paradigmatic stature it has achieved in higher education. Since its adoption from Germanic tradition in the mid-nineteenth century, the lecture has been principal and venerated means of transmitting knowledge from scholar and perpetuated both the knowledge and its mode of transmission. The lecture came to represent tradition in general (and perhaps recalled a particular role model specifically), it symbolized the prestige of scholarship, and aside from augmenting it with recitation, it was all that the scholar knew how to do ? The faculty's tenacious hold on the lecture method in the face of new alternative teaching technologies is in part, a continuation of respected academic tradition.

Another important reason for the lecture's continued popularity has been its practicability. The enor-

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mous growth of higher education institutions in the past three decades strained limited faculty resources. It was simply easier to accommodate the students boom by lecturing the hundreds of students in an auditorium. And in future repetitions of the course, a revision or update of the original lecture consumed less time, thereby providing more time for research or consulting. The lecturer, then, has come to represent the convergence of role, norm, and value in the teaching faculty member. However, faculty account for only part of the explanation. An understanding of the student's goals and attitudes is centrally important to incorporate new technology in college instruction.

Student Influences

The university/college student brings to the classroom a respect for the authority and power of the faculty, a set of goals, and a unique learning style. The student will generally accept what the faculty suggest, and will perceive both the content and the way it is transmitted as legitimate. It is not to say that the student is uncritical, only that he or she is generally deferential. This trait works in favour of perpetuation of the status quo regarding the lecture as the dominant teaching transmission technology of the college. To date, the challenges raised by the students have related principally to course content and not the way it was presented.

Students' goals and expectations are important, because they involve not only immediate content and interest but also long range occupational objectives. The increasing prevalence of utilitarian motivation for college education over the last decade as well as increasing costs and decreasing student aid, have specific implications for the classroom. Students want to learn what they need to know, and they want to learn it efficiently. Further, the upward age shift in the student population, underscores the importance of greater recognition of principles of adult development theory in college instruction, most notably that students may have widely differing learning styles.

And, finally, today's college student has grown up with high technology, playing an increasing role in his or her life and education. The product of this mixture of conditions is a student who has focussed the goals, who is a sophisticated consumer, and who has a lower threshold of tolerance for how his or her class time is spent than his or her predecessors.

Student's respect for faculty is increasingly based upon the student's perception of the faculty's ability to facilitate his or her goals, rather than the faculty's arbitrary position distinction. A change from the vertical relationship of teacher lecturing to student to a more horizontal relationship where the faculty is the superior resource for the student's goal achievement may be an outcome of adopting new alternatives in teaching. To understand these changes in the student population, particularly their emerging expectations, is essential to imposing a strategy for change.

Incentive Structure

As central as teaching appears to be in the college and university, it is research, not teaching, that carries the dominating influence in the institutional incentive system. This brings us to the fundamental explanation of why new technology has not achieved more widespread application in university instruction.

A review of most faculty workloads indicates that the preponderance of their time is reportedly devoted to teaching, while a review of most promotion and tenure criteria indicates that research productivity is the measure of excellent performance. More specifically, the publication of a book or of an article in a respected referred journal represents the epitome of academic achievement. Publication, as with the lecture, has achieved paradigmatic stature and reflects, at least in terms of institutional recognition, the most highly valued function of higher education faculty. Were this strictly a condition of a single institution the change might not be as complex ? However, most institutional incentive criteria merely reflect "industrywide standards of performance and prestige". Where a private business may construct performance expectations and incentive systems unique to its objectives, the university tradition of achievement spans time and geography interlocks faculty across disciplines and institutions. While this enriches the sense of community, heritage, and prestige, it also presents a formidable obstacle to change.

The residual effects of the research emphasis upon the stature of teaching are apparent, as are the implications for encouraging new technology applications to college teaching. Teaching requires substantial faculty time, yet it is not acknowledged as significant function as research. Consequently, attention to teaching and preparation for classes are minimized inadvertently, and ways are sought to ransom time for the more professionally lucrative research, publication and consulting. Unfortunately, the lecture hod of teaching accommodates this cycle of nts. In addition to the prestige of peer recog- on, a secondary benefit may accrue from the lication orientation book royalties. In a pro- ion where peer esteem and internal satisfaction are ected to supplement humble salaries for one's npensations, it should come as no surprise that ulty would use writing or consulting to improve ir financial condition.

All this is not to suggest inordinate concern for oney among faculty, but also the pressures for ademic survival and achievement, as well as the nptations of prosperity, are great, and that higher ucational incentive systems do not encourage haviour to the contrary. In such an environment, w technology applications in college instruction will undertaken primarily for the secondary benefits at they will produce. Such an innovation must omise saving of or release from teaching time, or yalties, or the prospect of a publication that may sist the faculty's professional achievement. As long technological innovation in teaching is a means ther than an end in terms of the institutional incen- ve system, the pace of exploration and use of these ols will remain slow and intermittent. In addition the more recognizable parts played by faculty, udents, and the institutional incentive system, other spects of the college and university also contribute, more subtly, to reinforce conditions adverse to the ntroduction of new technologies in teaching.

rganizational Constraints

First is the marketing dimension of admissions nd recruiting, where the institution and its programmes are portrayed so as to attract a particular kind of student. Second are the funding liaisons. In the case of public university, communication with the State Legislature provides rationale for programme support; with the private institution the alumni office and foundation relations are the loci of supportive sub system efforts. Third are the local chapters or subunits of national professional associations which can relate local institutional interests to a broader constituency. And, fourth are the institutional officers and planners. Each of these functions contributes to maintenance of the status quo in regard to technological innovation in teaching.

Recruitment marketing in most universities continues to present the traditional classroom lecture experience as the archetype of college instruction. The claim to distinction remains the quality and renown of the faculty (lecturer) and the rich resources of libraries, museums, and so on. This function perpetuates the student's expectation regarding what constitutes appropriate college instruction. It is a subtle, but important communication.

Second is the relationship with the institution's main funding source. It is interesting, but not surprising, to observe that teaching is put forward to legislatures and alumni as a principal activity of the university. The value of research, except in the case of the emerging partnerships with business and industry, is often an elusive and difficult concept to communicate to a sponsor, especially when those sponsors are lay people deciding among competitive requests. Consequently, funding requests go forward citing students' credit hours, faculty students ratios, and so on.

Most of the data bases for the financial reporting and planning of academic programmes have grown up around the lecture as the central instructional technology of the university. Administrators have become quite proficient in manipulating these data to argue on behalf of increased support, continuation of programmes, and even quality issues. They have succeeded in establishing the primacy of the teaching function and the desirability of high quality instruction to the funding sources. This is advantageous for a changed strategy touting the centrality of improvement of teaching. However, the model upon which these arguments have been established is too narrowly conceived to accommodate the variables that may arise from new technology applications to college instruction. This is a technical obstacle to be overcome, but it must be undertaken carefully so as not to jeopardize the established expectations regarding teaching which we wish to retain. It is the language of the arguments that will require updating to implement change (expanding definitions of student-credit hour, full-time equivalent, etc.)

The local units of national professional organisations are also subtle but potentially important. They can be powerful reinforcers of tradition within their respective disciplines (History, Anthropology, etc.) or across the broader scholarly community by perpetuating norms, and research and publication emphasis. The extent to which these chapters are influential depends mainly upon the prestige of the institution and its governing members. It is apparent that to the extent this is an influence for the status quo, it may also become an influence for change by disseminating and sanctioning news of innovations.

The enormous numbers of students coming into higher education over the last 30 years precipitated phenomenal quantitative growth; more institutions, more faculty, more buildings. Institutional research and planning in this context functioned to accommodate the growth demands of the environment, and the emphasis was upon plant expansion. In the 1970s as the growth mode gave way to shifts in economics and student demography, a more distinctive function to these offices began to emerge and take a more prominent place in the university. It gained importance because of its contributions to decision strategies regarding reduction and retrenchment. The transformation in emphasis was from accommodating quantitative growth to facilitating qualitative retrenchment. These offices also began to acquire more sophisticated market and policy analysis capabilities. In many instances, these offices are merely feeding back intra-institutional discriptive studies to the university. But where environmental analysis is done with an eye toward institutional change strategies, this office has served an increasingly important function in the university.

The dimension of the university's operation has contributed to the higher education's organisational problem vis-a-vis new technology and instruction in so far as it has facilitated the physical institutionalization of the lecture; classrooms and lecture halls all reflect this. But the changes in the institutional research function along with environmental pressures and offer great potential for their use as a tool for change. Their success, however, depend greatly upon the resources provided to them, the timeliness of their work, and most importantly, the use of their products in the decision process. The locus of that decision making process lies within the institutional leadership, is another major explanatory factor in this argument.

Leadership Within the Organization

While there are certain organisational tasks where administration leads, the complexity and diffusion of authority in the university require that the academic governance be a subtle, interactive process that surfaces consensus and resolves conflict among several formal and informal authorities. Administrative organisation charts reflect a traditional bureaucratic orientation. Democratically elected faculty senates or government nominees represent another element of the decision-making apparatus. A myriad of politically functioning interest groups representing disciplines, interdisciplinary coalitions, and special issues also enter the mix. The reason that institutional leadership has contributed to the persistence of the lecture as the central instructional technology of the university (and subsequently, the lack of interest in new technological instructional approaches), has to do with the traditional role of academic administration.

In the evolution of the academic administration, the management function arose to coordinate the logistical exigencies attendant to instruction. These are necessary, if secondarily important, activities were first performed by the teaching scholars themselves; but as the instructional enterprise grew, the continued rationale for its existence and authority to operate is derived from the teaching function; that is, academic administration's purpose was to provide, unobtrusively, the resources and environment in which higher education took place. That rationale is still touted today, but due to enormous increase in the institutional complexity in response to environmental change, academic management is gaining an even greater ascendancy.

During the great growth period of higher education in the three decades, there was a benevolent aura about the decision making proccss as the university resolved its conflicts of resource allocation. It was an era of plenty, and the questions were ones of who received the greatest increase, assuming all got some. Administration helped preside over this process and faculty saw them, at best, as facilitators of the process of mass enrichment. The subtle, but steady, accretion of power over resource allocation by administration became most apparent as higher education entered into its era of scarcity. The character of conflict resolution changed from benevolent to malevolent as declining resources dictated programme reduction or, at best, selective enrichment. And the complexity of acquiring the resources and maintaining the institution in this context has reinforced management's importance in sustaining the quality of the higher education experience. These developments have substantially compounded the problems of conflict resolution.

Implications for our question follow. First, administration is in a position to be a powerful agent for change. Second, the strong tradition of faculty primacy, autonomy, and authority remains, and since faculty are cognizant of their increased dependence upon administration in the resource allocation process, great care must be taken in how change involving new technology applications to instruction is introduced. Such a change is likely to be perceived as an intrusion—activity that is distinctly outside lministration's purview. Two factors can mitigate is. One, administrators have generally arisen from ie faculty ranks, a condition that can provide a ase for mutual trust. Also, an argument can be nade that such change is in the tradition of admintration's support of instruction. Another complicaion may arise due to academic administration's scendancy being coincident with the availability and ffordability of new technology for instructional use. Jniversity administration bears a strong resemblance mong many faculties to the operation of corporate ndustrial management. The adverse relationship etween administration and faculty with the widepread rise of collective bargaining on campuses has nly reinforced this image. It is but a short step to lraw an analogy from corporate management's pplication of new technology to automate industry vith the consequent displacement of many workers. In addition to the faculty's philosophical position that innovation in teaching is outside the purview of administration, they may also be anxious about the potential consequences of such technological innovation.

The Broader Institutional Environment

These aspects of the college and university have distinct characteristics derived from their unique environments. The environment has a multiple effect upon the organisation, affecting every aspect directly and indirectly as each activity influences the other. From this interaction emerges an organisational climate in which new technology applications to instruction are to be introduced. Some of these features have been mentioned above.

While technology in the form of the telephone and television has been widely available for many years, only recently has the escalated pace of technological development begun to present higher education with exotic technologies and with potential teaching uses. Although, the technology is now becoming available, the economic climate for higher education is breeding a conservatism that does not bode well for innovation. Inflation has driven the costs of operating an institution to unprecedented levels. Faculty conservatism derives from concern over possible programme and staff elminations; and, the pressures for performance along traditional lines to ensure survival tend to override inclinations toward the more uncertain consequences of innovative approaches.

Conservatism also permeates the student population. The cost of education and the pragmatic orientation of students to a career surface mild impatience with anything that does not seem to contribute directly to their employment. But students still respect faculty as the controllers of the credential. The conservatism of the administration and students can also be positive features of the organisational climate. Management's concern for cost-effectiveness may lead them to consider new technology as cost-effective alternatives that ameliorate the current labour intensive character of university instruction.

New technology instructional strategies may also appeal to students who desire to pursue a specific topic at any given time and at their own pace. This may be increasingly true as we look at changes in the student population—another significant environmental feature. There is an increase in older part-time students or students offering correspondence courses. These students share the younger group's specificity of reason for enrolling in college courses. They are generally employed (hence, studying part-time classes), and are highly motivated. This is an environmental condition that bodes well for new technology instructional applications. Students may welcome alternatives to traditional instruction, finding them attractive for their savings of time and money and raising efficiency in learning.

Technology so pervades life's routines that students are coming to the college (classroom) with a higher threshold of sensory stimulation. The combination of visual and auditory stimulation inherent in television, the immediate feedback and reinforcement mechanisms of the popular video games, the ability to search newspaper data bases from home computer terminals, the automated bank teller, and so on : today's college student is coming to expect technological sophistication in his or her environment.

This is not to say that college teaching must necessarily and wholly embrace these technologies, but that the lecture may be in danger of becoming an even less effective means of engaging the student's critical attention than it now seems to be. Nor is all this to say that the faculty and their lectures are anachronisms. The hardware and courseware of the new technologies can only complement the teacher. The best kind of education still involves the intuitive value judgment, the leap of imagination, the processing of data by analogy rather than education and human interaction still seems to be the catalyst for these processes.

In Sum

It is a difficult time in which to encourage new university teaching endeavours with untested and albeit promising technology. The traditions of academy have grown up around the simple conventions of solitary scholarship and the lecture and recitation. The prestige and honour have accrued to those who performed these functions well. It is not reasonable or even, perhaps, desirable to attempt radical alteration of the norms. They must, however, be tempered if there is to be accommodation of variation and innovation in post-secondary education.

Institutional incentive system is closely related to academic traditions. If faculty is intended to employ more widely these new technologies, the incentive structure of their workplace must reward and encourage experimentation outside of the norm. Not only faculty workload and incentive considerations must be addressed, but all aspects of the organisation's life (student services, institutional research, recruiting and admissions, etc.) must also reflect commitment to accommodate technological innovation in university teaching.

Students' learning styles and educational goals must be acknowledged and accommodated if the faculty and institution have to retain credibility. Today's college student comes into the classroom with a higher degree of knowledge about technological sophistication than his or her predecessors. This may have far reaching implications for uses of class time other than traditional information dissemination through the lecture.

The most important element, in this crucial moment that ultimately determines the kind and direction of change is the leadership of the organisation. Fostering the kind of institutional climate in which technological innovation takes place requires a committed, effective and academic leadership throughout the organisation. ☐

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The Story of the Banaras Hindu University

Banaras Hindu University which started as a ional seat of learning in the country, owes its origin ı number of converging variables that contributed he cultural resurgence during the late nineteenth l beginning of twentieth centuries. This was a period en many charismatic personalities appeared on the itical and social horizon of the country excelling in ersified areas of life and ideas to make India a rant and unified force. Pt. Madan Mohan Malaviya ongs to that galaxy of leaders who were dreamers d enquirers and whose perceptions matched their tions. It is a tribute to the genius of Pandit Madan ohan Malaviya that he envisaged a model university r the country that would combine the best in the estren scientific thought and the Eastern traditional sdom, and would be located at a strategic point of aranasi which had been the cultural capital of the untry since the dawn of our history. Apart from is sacred variable, this region was the most backward ea and needed a viable educational and manpower ase for harnessing the rich potential of the region for evelopmental purposes.

Since the inception of the University in 1916, it has layed a major role in the national building process nd contributed immensely by providing educational raining and research facilities in various disciplines to ne young minds. The students of this University did ot live in an ivory tower during the formative stage f its growth but were integrated in the national tream of India's struggle for Independence. It has roduced many outstanding freedom fighters and was onsidered as the second Anand Bhawan by the natio- alists during the freedom movement. It was a centre f clash of ideologies and many ideologically poles part groups were nurtured and nourished in this acred environment and contributed meaningfully to he process of political development.

The story of its establishment is quite fascinating and romantic, and even incredible. One often wonders as to how the founder of the University was able to raise gigantic material and imaginative manpower resources for the fulfilment of his dream.

The scheme to establish the University was first discussed at a meeting held in 1904 at the 'Mint House' at Banaras under the presidentship of His Highness Maharaja Sir Prabhu Narayan Singh of Banaras. A prospectus of the proposed university was published and circulated in October 1905 and it was discussed at a selected meeting held at Banaras on 31st December, 1905 at which a number of distinguished educationists and representatives of the Hindu community of almost every province of India were present. Top Congress leaders, such as, Gopal Krishna Gokhale and Surendra Nath Banerjee blessed Malaviyaji and asked him to go ahead with the scheme. The scheme was also considered and approved by the Sanatan Dharma Mahasabha which met at Allahabad in January 1906 under the presidentship of Jagadguru Shankaracharya of Govardhan Math. Having secured the approval of educationists, national leaders and religious representatives, Malaviyaji issued the prospectus to the general public on March 12, 1906. The scheme met with approval and received strong support of the press and the public. However, owing to the unfavourable political atmosphere in the country, nothing substantial could be achieved until 1910 when Malaviyaji decided to give up his roaring practice at the Bar in order to devote all his energies to the Hindu University movement. In the meantime, a revised prospectus of the University had been prepared and issued to the public.

Under the aforesaid prospectus, the objects of the proposed university were formulated asunder :

(i) To promote the study of the Hindu Shastras and of Sanskrit literature generally as a means of preserving and popularising for the benefit of the Hindus in particular and of the world at large in general, the best thought and culture of the Hindus, and all that was good and great in the ancient civilization of India;

(ii) to promote to learning and research generally in arts and science in all branches;

(iii) to advance and diffuse such scientific, technical and professional knowledge, combined with the necessary practical training, as is best calculated to help in promoting indigenous industries and in developing the material resources of the country; and

(iv) to promote the building up of character in youth by making religion and ethics an integral part of education.

In order to carry out the above objectives, the university was to comprise the following colleges :

1. A Sanskrit College with a Theological Department;
2. A College of Arts and Literature;
3. A College of Science and Technology;
4. A College of Agriculture;
5. A College of Commerce;
6. A College of Medicine; and
7. A College of Music and the Fine Arts.

An important feature of the proposed university was to be its residential and teaching character with special emphasis on character building and religious instruction. All the then universities of India, viz., those of Calcutta, Bombay, Madras, Lahore and Allahabad, were mainly examining universities. While they had accomplished and were doing very meaningful work, Malaviyaji felt that a mere examining university by its very nature tended to develop the memory out of all proportion to the other faculties of mind and could do little to promote the formation of character. He quoted an English writer who had observed, that "although genius always commands admiration, character secures most respect. The former is merely the product of brain power, the latter of heart power ; and in the long run it is the heart that rules in life". Malaviyaji emphasised, "A teaching university would but half perform its function if it does not seek to develop the heart power of its scholars with the same solicitude with which it would develop their brain power. Hence it is that the proposed university has placed the formation of character in youth as one of its principal objects. . . .And what can be more helpful and effective in the training of the character of Hindu youth than the noble teachings of the Hindu religion ?"

The Revised Prospectus of the University made a significant departure from the First Prospectus of 1904 which merits attention here. Under the First Prospectus the medium of instruction in the Hindu University was to be Hindi, in the words of the Mahamana, "India cannot regain her prosperity until the study and application of the modern sciences becomes, so to speak, naturalised in the country. Science cannot become a national possession so long as it has to be studied through the medium of a foreign language. A wide diffusion of science in India. . . . . is not possible until science, both theoretical and practical, can be learnt by Indians in their own country and in their own vernaculars A foreign language. . .cannot serve as vehicle of original thought and medium of instruction for a whole community." Rejecting the suggestic that English should be employed as the medium instruction atleast in the beginning, Malaviyaji opi ed, "if lectures are not required to be delivered in t vernacular from the beginning, the preparation textbooks in Indian vernaculars will be delayed, whi will lead practically to a continued use of English the means of instruction." Prophetic words as the were, unfortunately this decision had to be given owing, among others, to the opposition of the Gover ment of India, and English was accepted as t medium of instruction in the Revised Prospectus the university.

The year 1911 was very significant in the history the Hindu University movement in many ways. Almo simultaneously with the launching of the scheme f the Hindu University, Dr. Annie Besant the found of the famous Central Hindu College, Banaras w also working for the establishment of "The Universi of India" at Banaras. She submitted in 1907, a Mem randum for the grant of a Royal Charter for its est blishment. Maharaja Rameshwar Singh of Darbh anga was also sponsoring a scheme for the establis ment of a Sharda Vidyapeeth (Sanskrit University) Banaras. Malaviyaji met Dr. Besant and the Mahara and persuaded them to give up their schemes and wo unitedly for the Hindu University. Bringing out th consensus was a great achievement in itself. In Oct ber, 1911, together with the Maharaja of Darbhang Malaviyaji waited upon the then Viceroy and t Member for Education and secured their support f the proposed University. "The Hindu Universi Society" was soon formed and got registered December, 1911 with Maharaja Rameshwar Singh Darbhanga as its President and Sir Sunder Lal as i Secretary. Thus, the foundations of the Universi were truly laid and a great educational enterprise w launched in full swing in 1911

The Maharaja of Darbhanga not only donated a sum of Rupees five lakhs but also led a deputatio to different parts of the country to raise funds. Princ and paupers, the rich and the poor, all contribut generously to the funds of the University. Malaviya was endowed with a rich melodious voice and remark able gift of speech whose style, delivery and lucidi had no parallel. He made the fullest use of this collecting funds for the University. His brillia speeches produced ennobling influence on the min of Hindus who contributed with all the might th they had at their command. The promises of donatio of nearly rupees thirty lakhs were scured from t public in the course of a few months and, by the begi g of 1915, actual collection exceeded Rs. 50 lakhs, sum prescribed by the Government of India for oduction of the scheme of the University. Another dition of the Government was also fulfilled on the n November, 1914 when the charge of the Central du College was handed over to the Hindu Uni- sity Society.

The Banaras Hindu University Bill was introduced he Imperial Legislative Council by Sir Harcourt tler, the Member for Education, in March 1915 d was passed and received the assent of the Gover- r General the same year on October 1. During the urse of the debate on the Bill, Malaviyaji made it ear that the University would be a denominational titution but not a sectarian one. In fact, it has all ng been a catholic institution. It offers freeships, olarships and general scholarships of merit, and is en to persons of all classes, castes and creeds and both sexes. Hindus, Muslim, Parsi and Buddhist dents have been living in the same hostels and even aring each other's joys and sorrows. The schedu- d castes students were exempted from the payment all tuition fees from the beginning of the Uni- rsity.

Arrangements were soon made for laying the undation stone of the University in a befitting anner. A site opposite the Ramnagar Palace was lected for that purpose. In a glittering ceremony d amid great rejoicing and festivities, Lord Hard- ge, Viceroy and Governor-General of India, laid the undation stone of the University on 4th February, 916 in the presence of a distinguished gathering. peaking of this gathering Lord Hardinge remarked : It has seldom fallen to my lot to address a more istinguished gathering than which I see before me oday, including, as it does, the Governor of Bengal, constellation of Lieutenant Governors, a veritable alaxy of Ruling Princes and so much of the flower f India's intellect." The foundation laying ceremony as preceded by a fortnight of elaborate Puja and as followed by a four day programme of lectures by Mahatma Gandhi, Dr. Annie Besant, Sir J.C. Bose, r. P.C. Roy, Prof. C.V. Raman, etc.

The Banaras Hindu University Act came into orce on April 1, 1916. Sir Sunder Lal, an eminent urist and the Secretary of the Hindu University Society, was appointed the first Vice Chancellor of the University. He was followed by Sir P.S. Sivaswami Aiyer, after whom the Mahamana himself assumed the charge of the Vice Chancellorship in 1919 and continued to guide the destinies of the University in that capacity until 1939. An extensive area of about 1300 acres was acquired for the University. A lay-out plan was prepared, roads were laid out and the construction of buildings began in 1919.

The Central Hindu College became the first constituent college of the University on October 1, 1917, followed by the College of Oriental Learning and Theology (July. 1918), the Teacher's Training College (August, 1918) and the Engineering College (August, 1919). The construction of the buildings of the Arts College, the Physics Laboratory, the Chemical Laboratory, the Power House, several Workshops of the Engineering College, Ruiya, Birla and Broacha hostels and some residential quarters was completed by 1921. These were formally opened by the Prince of Wales in December, 1921.

Courses in Geology, Mining and Metallurgy, and Industrial Chemistry followed in quick succession. The Law College was established in 1923. Ayurvedic College in 1924 and the Women's College in 1928. An Institute of Agricultural Botany was also established. Thus, within a short span of 16 years, the University had established as many as 32 departments of Instruction and training. A separate College of Science was constituted in 1935 comprising the Departments of Physics, Chemistry, Botany, Zoology, Pharmaceutical Chemistry, Industrial Chemistry and Ceramics. A new department of Glass was added to it in 1937 and a separate degree course in Pharmacy was instituted in 1938. By the end of 1939, a separate college of Technology was organised consisting of the departments of Industrial Chemistry, Pharmaceutical Chemistry, Ceramics and Glass Technology. In addition to these institutions, the University provided for extensive playgrounds for various games and sports, and a gymnasium hall, named after Shivaji, was constructed.

Malaviyaji was an ideal Kulapati. To the students, teachers and other employees of the University, he was more of a guardian angel than a mere Vice Chancellor. Nobody returned from his door without receiving some help or encouragement. Although the teachers were paid much less than their market value, a galaxy of eminent scholars were attracted to almost every department of the University under his Vice Chancellorship. Conscientious workers never failed to receive a pat on their back from him. He often paid visits to the various colleges, hostels and laboratories to have first hand knowledge of the difficulties of the students and teachers. His role as the Vice Chancellor of the University for two decades was no less glorious than his role as its founder.

Dr. Sir S. Radhakrishnan succeeded the Mahamana as Vice Chancellor on 24th Sept., 1939 and remained at the helm of affairs of the University for about nine long years. It was during his regime that commerce courses were started in 1940 and the University celebrated its Silver Jubilee in 1942 with Mahatma Gandhi delivering the Silver Jubilee Convocation Address in Hindi. Dr. Sarvapalli Radhakrishnan, speaking at the Silver Jubilee of the Banaras Hindu University said : "Here we did not have a bit of stone, but a whole landcape. If only nature could have life and memory, the stones of Banaras would be able to repeat the words of Ved Vyas and the Rishis of the Upanishads. the sermons of the Buddha, the message of the Gita and the sayings of hundreds of saints and teachers, who have lived in this neighbourhood." Dr. Amar Nath Jha succeeded Dr. Radhakrishnan in 1948 and was himself succeeded the same year by Pt. Govind Malaviya.

The University witnessed another spurt in its developmental activities during the regime of Pt. Govind Malaviya. During a short period of three years, he was instrumental in the establishment of the College of Indology. The College of Music and Fine Arts and the Bharat Kala Bhawan. Four new hostels named after Dr. Radhakrishnan, Dr. Bhagwan Das, Dr. I.N. Gurtu and Dr. Shyama Charan De and a large number of residential quarters were constructed.

The University was able to establish its identity brick by brick on the pattern of basic building blocks and its reputation spread throughout the country and even across the continents. It has been able to attract to its Vice Chancellorship the very best in the field of education in India. After Pt. Govind Malaviya, Acharya Narendra Deva. Sir C.P. Ramaswamy Aiyer, Dr. V.S. Jha, Shri N.H. Bhagwati, Dr. Triguna Sen, Dr. A.C. Joshi, Dr. K.L. Shrimali, Dr. M.L. Dhar, Dr. Hari Narain and Prof. Iqbal Narain successively adorned the office of its Vice Chancellor and helped it continue its progress unabated. The Vice Chancellor, Dr. K.L. Shrimali, was an alumnus of the University with a long and distinguished record of service in the field of education. He had been at the helm of affairs of the University since October, 1969 to January 1977 and his contributions to the development of the University are manifold. During his tenure of office, Dr. Shrimali added ten new hostels including three for women, three hostels for teachers, over a hundred residential quarters of different categories, a Hindi Bhawan, a building each for the Departments of Management Studies and Applied Arts, three cafetarias, a Health Centre, a hospital complex costing over Rs. 1.5 crores, besides extension of many of the existing buildings and renovation of hostels.

The University experienced many ups and down and even witnessed the crisis of its identity due to a number of external and internal pressures and constraints. The crisis in campus environment has to be viewed against the background of a national crisis that has affected the quality of education. The challenge posed dislocated the tranquility of the campus life and the educational planners and practitioners did not know how to restore the credibility of the system. There was a gradual decline of the educational system at all levels The concern and anxiety about it has been brilliantly examined in a preliminary document of the New Education Policy that was released by the Ministry of Education, Govt. of India to seek the participation and involvement of academic community in the process of formulation of new education policy. This document titled 'Challenge Education—a policy perspective' was debated wide throughout the country and the dialogue on it gen rated a number of issues and options that facilitat formulation of New Education Policy.

Prof. R.P. Rastogi who joined this University April 1985 had to grapple with many problems th were inherent in the complex structure of the Banara Hindu University. A distinguished Scientist of inte national repute, he succeeded in grasping the natur scope and dimensions of the problems and accorde priority to the introduction of discipline in the student and the teaching communities. It was exceedingly difficult to bring back the era of discipline i the campus due to the mounting socio-political an other non-academic factors. Being an objectiv administrator and committed to the concept of excellence, his firm policies in the administration di succeed and the University began to function smoothly. The examination system which was in a critica state and behind its normal schedule for a numbe of years was brought back to normal positio and according to the Calendar of the University. Then came the 125th birth anniversary of Pt Madan Mohan Malaviya. This provided a new opportunity for self introspection and self analysis and dialogue with life and works of Malaviyaji for fruitio of his ideals and objectives. This effort was widel acclaimed by the academic community and most o the departments and faculty earnestly tried to improve the impoverished campus environment by organising a series of national and international seminars and conferences. The re-emergence of peace and order on the campus provided an impetus to improve the educational climate. One could perceive a sense of involvement and an urge to extend the frontiers of knowledge on the part of the academic community and research students towards various conferences and seminars.

The University has responded to the new concept and the important role of extension education that the government has added to the University system for fulfilling the social obligation. The University is running a programme of Integrated Rural Development and has set up a Centre for Adult and Continuing Education. Its programmes in rural housing, agriculture extension services, social medicine and social surgery, community medicine, legal aid clinics, etc., etc. have won wide acclaim. The good work done by many of the departments of the University has been recognised by the various funding agencies as also the University Grants Commission. This has led to upliftment of the status of many of the departments.

The Associatian of Indian Universities is organising its annual meeting and the conference of the Vice Chancellors on the campus of the Banaras Hindu University. It is hoped that this conference will generate a number of new educational ideas and policy alternatives that would provide a new thrust and a new meaning to the educational system. It is only through a process of dialogue and exchange of ideas that the renewal and updating of ideas is possible in a rapidly changing educational scene converging to explosion in science and technology. □

Pandit Madan Mohan Malaviya Founder of the Banaras Hindu University

S. Somaskandan

On the 25th December, 1861, when the world was celebrating the birth day of Jesus Christ, in a poor but pious and religious family at Allahabad was born another apostle of peace and goodwill among men, Pandit Madan Mohan Malaviya. His ancestors had come from Malva and settled down at Prayag (Allahabad), the Tirtharaj, the confluence of the three sacred rivers. His father, Pandit Braj Nath Vyas was a great devotee of Lord Krishna and was always absorbed in his study and preaching of the gospel of Srimad Bhagavata.

Pandit Madan Mohan Malaviya had his early education in Pandit Hardevji's Dharmopadesh Pathshala and the Vidya Dharma Pravardhini Sabha Pathashala. The seeds of religion were sown in his young mind and before he attained the age of seven, he could preach to big gatherings with wonderful ease and elegance casting a magic spell on his listeners. His Upanayana was performed when he was nine years of age. He was then admitted in the District High School where he studied while continuing his Sanskrit education. He passed the Entrance Examination in 1839 after which he took his admission in the Muir College, Allahabad, where he had the good fortune to come into close contact with Mahamahopadhyaya Pandit Adity Ram Bhattacharya, Professor of Sanskrit in the Muir College. Pandit Aditya Ram Bhattacharya was like an Acharya of the ancient Indian Institutions who was looked upon as a father by the students. Pandit Aditya Ram Bhattacharya had a great hand in moulding the life of Pandit Madan Mohan Malaviya.

In 1880, the efforts of Pandit Aditya Ram Bhattacharya brought about the establishment of the Hindu Samaj at Allahabad, the first political organization in the city and he (Pandit Aditya Ram Bhattacharya) had Pandit Madan Mohan Malaviya admitted to it as a member even though he was still an undergraduate at the Muir Central College. Pandit Malaviya became a leading worker of the Samaj which was primarily concerned with social reform. Thus he started his social work while prosecuting his studies in the College. He graduated from the University of Calcutta in 1884. He then joined the M.A. classes but the poor financial condition of his family compelled him to leave the College soon. He accepted an appointment as a teacher in the Government High School at Allahabad. He also carried on his social activities as a leading worker of the Hindu Samaj. In 1885, when the Indian National Congress came into existence, the Hindu Samaj was reoriented as a provincial organizatiod under the name Madhya Hindu Samaj. It adopted the programme of the Hindu Samaj with emphasis on its social and political work and it became one of the recognised political bodies by whom delegates were elected to attend the annual sessions of the Indian National Congress. Pandit Malaviya was one of the delegates elected by the Samaj to attend the session of the Indian National Congress held at Calcutta in 1886. Pandit Malaviya not only attended this session but also made his maiden speech at the Congress on the fourth day of the session which captured the heart of everyone. Mr. A.O. Hume, the "Father of the Congress", recorded in his report of that session as follows :

"But perhaps the speech that was most enthusiastically received was one made by Pandit Madan Mohan Malaviya, a high caste Brahmin, whose fair complexion, and delicately chiselled features, instinct with intellectuality, at once impressed every eye, and who suddenly jumping up on a chair beside the president, poured forth a manifestly impromptu speech with an energy and eloquence, that carried everything before him".

Sri Surendra Nath Banerjee, the great national leader and orator says :

"......He (Pandit Madan Mohan Malaviya) was so young that he had to be lifted up on a chair in order that the audience might have an opportunity of having a look at him. He had a fascinating appearance but the audience was more charmed by the eloquence of the youthful orator than by his good looks, and that speech, one of the very best that I have heard, made a deep impression upon the minds of the Congress gathering, and pointed him out as one of the future leaders of the Congress movement."

The performance of Pandit Malaviya at the Congress session of 1886 brought him to the forefront of the national leaders. Raja Rampal Singh of Kalakankar who had also joined the Congress was so much charmed with the power of speech and personality of Pandit Malaviya that he pressed him to accept the editorship of the Hindi daily *Hindustan* of which Raja Rampal Singh was the proprietor. Pandit Malaviya conducted the *Hindustan* so ably for a period of nearly three years, that it established his fame as an able journalist.

In 1889, he rejoined the Muir Central College, completed the law course and obtained the LL.B. degree in 1892. He also passed the High Court Vakil examination and entered the bar as a practising lawyer. With his brilliant intellect, rare powers of eloquence and hard work, he quickly rose to eminence in the profession. He was known in the profession as a lawyer of very keen intellect, extremely fair in the presentation of his cases, courteous to his opponents but above everything else he combined scrupulousness to the highest degree with ability of high order. Successive Chief Justices held him in high regard not only for his ability but for his spotless character.

But Pandit Malaviya did not give his whole attention and energy to the legal profession. He carried on his social and political activities simultaneously.

During his tours of the country while attending the Congress Sessions, Pandit Malaviya had the opportunity of observing the conditions in the different spheres existing in the country and he came to the conclusion that in order to revitalise India as a nation, it was necessery to feed her youth with the ancient spiritual and moral food. This led him to organise in November 1900, a meeting of eminent persons at the Muir Central College, Allahabad for establishing a suitable and commodious Boarding House where Hindu students coming from various parts of the country to prosecute their studies at the Colleges at Allahabad could live under proper supervision and guidance, and receive instruction in such fundamental truths of the Hindu religion as are accepted by Hindus of all denominations. Pandit Malaviya succeeded in securing the support of several leading gentlemen in this work besides that of Maharaja Prabhu Narayan Singh of Banaras, and also of the then Lieutenant Governor of the United Provinces, Sir Antony MacDonnell. This resulted in the establishment of "The MacDonnell University Hindu Boarding House" at Allahabad. While performing the opening ceremony of the building, Sir Antony MacDonnell said :

"It was only in such boarding houses that proper religious and moral training could be given: It seems that the Hindus are beginning to feel their duties to their children in this respect. Every Government College in India should have a Hindu Boarding House attached to it, governed by the Hindus."

The burning desire to restore India to its past glory, the urge to combine religion with education for the purpose of developing the national spirit which was the foremost and pressing need of the country, the necessity of reorganising the Hindu Society and the need of placing at the service of the country efficiently trained young men of high moral character filled with patriotism and qualified to promote Indian industries in a variety of ways—all these worked together in the great mind of Pandit Madan Mohan Malaviya and he conceived and put forward in 1904 the idea of a University which would revive the best traditions of the ancient Gurukulas of India and which would combine with them the best traditions of the modern universities of the West where highest instruction was being imparted in Arts, Science and Technology. The idea took some time to mature and in December 1910, when Pandit Malaviya was almost in the first rank of practising lawyers, sacrificed the glowing prospects of the profession to the supreme aim of his life—service of his country and the establishment of the Hindu University at Banaras. He saw the fulfilment of his cherished dream in 1916, guided the destinies of the University as its Vice-Chancellor till Sept. 1939 and served it till the last moment of his life.

Though the Banaras Hindu University was the *magnum opus* of Malaviyaji, he did not confine his activities to the University only. He continued to be a beacon light in every activity of the country—political, social, religious, and educational. He was elected President of the Indian National Congress four times (1909, 1918, 1932 and 1933).

Malaviyaji was, in the words of Pandit Jawaharlal Nehru, "a giant among men, one of those who laid the foundation of modern Indian Nationalism and year by year, built up brick by brick and stone by stone, the noble edifice of Indian freedom".

He lived the typical life of a pious and orthodox Hindu, the life of a yogi, who renounced all selfish pursuits and devoted himself solely to the service of his motherland. He was an embodiment of love. His pure and spotless character, his unparalleled self-sacrifice and manifold services will always remain a source of inspiration to the Indian people.

He left his mortal remains on the 12th November 1946, but the great work that he has done and his sacrifice has made him immortal. As Gandhiji said in 1946, "Malaviyaji, the adored of Bharatvarsha is dead, long live Malaviyaji". □

Banaras Hindu University : Important Milestones

1916	Foundation Stone of the University is laid on Vasant Panchami Day.
1917	Central Hindu College, Kamachha declared a constituent College of the University and the University starts functioning on October 1.
1918	College of Oriental Learning and Theology and Teachers Training College are started; the first University examination is held; Building construction commences in May.
1919	Engineering College opens with courses in Mechanical and Electrical Engineering; the first convocation is held in January.
1921	Central Hindu College shifts to new site on the University Campus.
1923	Department of Mining and Metallurgy starts working as part of Engineering College; Law College is established; University Training Corps (UTC), now known as National Cadet Corps (NCC) commences work.
1924	Department of Industrial Chemistry starts with Ceramic Technology Section.
1925	12th Session of Indian Science Congress is held.
1928	Faculty of Ayurveda Medicine and Surgery is constituted in July.
1929	Women's College is opened.
1931	Institute of Agricultural Research is established.
1932	Department of Pharmaceutical Chemistry starts functioning.
1935	Science Departments of Central Hindu College are constituted into a separate College of Science.
1936	Department of Ceramics and Glass Technology is formed; College of Technology comprising Departments of Industrial Chemistry, Pharmaceutical Chemistry, Glass and Ceramics Technology comes into existence.
1941	Opening ceremony of the Sayaji Rao Gaekwad Central Library is performed; 28th Session of Indian Science Congress is held.
1942	Mahatma Gandhi addresses Special Convocation on the occasion of the Silver Jubilee Celebrations of the University.
1944	Department of Geography is established as part of the Faculty of Science.
1945	College of Mining and Metallurgy is established.
1946	Mahamana Malaviya, Founder of the University, passes away on November 12; Construction of the Viswanath Mandir commences; Institute of Agriculture Research acquires the status of a College of Agriculture.
1947	Intermediate classes of Central Hindu College and College of Science are shifted to the old Central Hindu College buildings and thus the Central Hindu College is reborn.
1950	College of Music and Fine Arts is founded; Bharat Kala Bhavan becomes an integral part of the University; College of Indology comes into existence.
1956	Department of Civil Engineering is added to the Engineering College.
1960	College of Medical Sciences is established and M.B.,B.S. course starts in September.
1961	Mahamana Malaviyaji centenary is celebrated.
1964	Centre of Advanced Study in Philosophy is established.
1965	Central Hindu College, Kamachha is abolished and all University classes return to the campus.
1966	University Celebrates Golden Jubilee; B.H.U. Act is amended resulting in abolition of the College system (excepting Women's College) and the establishment of the Faculty system; Construction of Viswanath Mandir is completed.
1968	Institute of Technology formed by integrating the Engineering College, the College of Mining and Metallurgy; 55th session of Indian Science Congress is held.
1969	Faculties of Theology and Oriental Learning merge into a single Faculty of Oriental Learning and Theology.
1970	College of Medical Sciences becomes Institute of Medical Sciences.
1971	Department of Electronics Engineering comes into being as part of the Institute of Technology; Faculty of Social Sciences comprising the Departments of Economics, History, Political Science, Psychology and Sociology.
1975	Yoga Sadhana Kendra (Centre for Yoga) is established on Vasant Panchami Day.
1976	University Celebrates Diamond Jubilee, Foundation Stone of "Swatantrata Bhavan" is laid.
1977	Schools of Life Sciences, Materials Science and Technology and Languages are constituted.
1978	Computer is ordered and building of the Computer Centre commences; Faculty of Medical Sciences bifurcates into two Faculties under the Institute of Medical Sciences, namely, the Faculty of Medicine and the Faculty of Indian Medicine; Faculty of Music and Fine Arts bifurcates into the Faculty of Performing Arts and the Faculty of Visual Arts.
1980	College of Agricultural Sciences gets elevated to Institute of Agricultural Sciences, Centres of Advanced Study in Metallurgy and Botany get established; Computer Centre is inaugurated.
1981	68th Session of Indian Science Congress is held.
1987	125th Birth Anniversary Celebrations of Mahamana under the joint auspices of Govt. of India and BHU.

BANARAS HINDU UNIVERSITY

A Synoptic View

(Established : 4th Feburary, 1916)

I. STATUS & NUMBERS

1. *Institute* : Technology, Medical Sciences, Agricultural Sciences
2. *Faculties* : 14 3. *Departments* : 112 4. *Schools & Centres* : Centre for Nepal Studies, School of Material Sciences, School of Biomedical Engineering, School of Biochemical Engineering, School of Biotechnology
5. *Advanced Centres* : Botany, Zoology & Met. Engineering
6. *Cosist* : Biochem., Physics, Chemistry, Mining, Chemical, Botany, Zoology, Electrical Engineering, Met. Engineering, Chemistry
7. *U.G.C. Special Assistance* : Physics, Geology, Mining Engineering, Ceramic, Biochem. (IMS), Electronics Engg., Philosophy, Geography and Commerce
8. *Major Research Project* : International : 15 National & other Out-agency Projects : 939
9. *Memorial Lectures* : Malaviyaji, Gandhiji, Dr. Annie Besant, Pandit Jawaharlal Nehru, Dr. B.R. Ambedkar & Extension Lectures.
10. *National Awards Conferred* : (*Present Faculty*)
    - (*a*) INSA Fellowships : 16 (*b*) S.S. Bhatnagar Award : 4
    - (*c*) ICAR Hari Om Trust Award ... 2
    - (*d*) Watumull Foundation (U.S.A.) Honor Summus Medal ... 1
11. *Books Written by Teachers* : About 400
12. *Books Holding* : Sayaji Rao Gaekward Library : over 7 lakhs.

II. COMPOSITION OF COMMUNITY

1. *Students* : 13507 2. *Foreign Students* : 212
3. *Teachers* : 1666 (Exclusive of Temp. & Recent Plan Posts)
4. *Non-Teaching Staff* : 4916 (Exclusive of Research Scholars & other programmes)

III. RESIDENTIAL FACILITIES

1. *Students* : 46 Hostels (7,770 students residing in Hostels)
2. *Quarters for Employees* : Teaching : 597 Non-Teaching : 594

IV. SCHOLARSHIPS

J. R. F. : 941 Out-Agency J. R. F. : 1448

Endowments : J. R. F. : 17 Scholarships : 137

V. STUDENTS' AMENITIES

Hind Flying Club, University Employment & Guidance Bureau, Health Centre, Banking, Swimming Pool, Amphi Theatre, N.C.C., N.S.S., Hobby Centre & Mountaineering, Etc.

VI. CONFERENCE FACILITIES

MMV Auditorium, Music Auditorium, Arts Auditorium, Law School Conference Room, Chemical Engineering Auditorium, SWATANTRATA BHAWAN (Hall of Independence) (2000 Capacity), Electronics Engineering Auditorium, Seminar & Lecture Rooms facilities, L. D. Guest House, University Guest House, Faculty Exchange Building.

VII. SUPPORTING SERVICES

U.W.D., E.W.S., Town Committee, Dairy & Agricultural Farm, B.H.U. Press, Publication Cell, S. S. Hospital (around 1000 beds Allopathic and 150 beds indigenous medicine), Ayurvedic Pharmacy, Instrumentation Centre, Employees' Dispensaries, Public Relations, Cafetaria & Canteens.

VIII. PLACES OF INTEREST

Malaviya Bhawan, Bharat Kala Bhawan, Vishwanath Temple, Swatantrata Bhawan, Sayaji Rao Gaekwad Library and the Campus itself.

IX. IMPORTANT LANDMARKS

1929 : Malaviyaji : Convocation Address on "National System of Education".
1942 : Silver Jubilee : Convocation Address by Mahatma Gandhiji & Quit India Movement.
1946 : Mahamana breathes his last in Malaviya Bhawan.
1961 : Mahamana Madan Mohan Malaviyaji's Centenary Celebrations.
1966 : Golden Jubilee. 1976 : Diamond Jubilee.
1987 : 125th Birth Anniversary Celebrations of Mahamana under the joint auspices of Government of India and B.H.U.

X. FINANCES

Block Grant : Rs. 32.00 Crores University Receipts : 2.55 Crores.

XI. UNIVERSITY MAINTAINED HIGHER SECONDARY SCHOOLS

Central Hindu Boys School, Central Hindu Girls School, Ranvir Sanskrit Vidyalaya, & Kendriya Vidyalaya.

Banaras Hindu University
A Pictorial View

Institute of Technology—Main Building

Institute of Medical Sciences—Main Building

Faculty of Ayurveda

Faculty of Social Sciences—Postgraduate Section

Women's College

Malaviya Bhavan

Mahatma Gandhi with Pt. Madan Mohan Malaviya

ASSOCIATION OF INDIAN UNIVERSITIES

63rd Annual Meeting

BANARAS HINDU UNIVERSITY

5-7 December, 1988

PROGRAMME

Monday, 5 December 1988

11.00 A.M.	Opening of Book Exhibition by Shri L.P. Sahi, Minister of State for Education, Government of India	
11.15 A.M.	Group Photograph	
11.30 A.M.	Inaugural Function	
	Welcome Address	— Prof. R.P. Rastogi, Vice-Chancellor, Banaras Hindu University
	Inaugural Address	— Shri L.P. Sahi, Minister of State for Education, Government of India
	Presidential Address	— Prof. P.V. Salvi, Vice-Chancellor, Marathwada Agricultural University and President, Association of Indian Universities
	Vote of Thanks	— Prof. S.K. Agrawala Secretary, Association of Indian Universities
3.00 P.M.	**Committee Meetings**	

Tuesday, 6 December 1988

9.00 A.M.	General Session
3.00 P.M.	Business Session (For Members only)
6.30 P.M.	Cultural Programme

Wednesday, 7 December 1988

9.30 A.M.	Special Discussion on Making the University System Work
4.00 P.M.	Concluding Remarks

BHU Hosts 63rd Annual Meeting of the Association of Indian Universities

The Association of Indian Universities meets in its 63rd Annual Session at the sprawling Banaras Hindu University Campus on 5th to 7th December, 1988. To be presided over by Prof. P.V. Salvi, Vice Chancellor, Marathwada Agricultural University and President, Association of Indian Universities, the meeting will be inaugurated by Shri L.P. Sahi, Minister of State for Education, Government of India.

A number of vital academic issues will come up for consideration of the General Body. Sri Krishnadevaraya University has proposed rural reconstruction through meaningful extension programmes. As the universities work for only over 100 days in an academic year, leisure time of both the faculty and students can be well utilised by rendering service to the rural community. The problems of rural health and sanitation, nutrition, modernisation of agriculture, motivation of rural people to take up meaningful employment etc., can be effectively tackled by student volunteers under the guidance of committed faculty members. It is suggested that extension be made a compulsory component of curriculum and faculty members and students given proper orientation before being drafted in the programme. Gandhigram Rural Institute has suggested that the university should act as a brain bank for the State and the Community, and play a greater role in solving the problems of the community where they are situated and their command area. It seeks to assign the role of a nodal agency to the proposed State Councils of Higher Education which should receive such problems and farm them out to the specific university departments for seeking innovative solutions. The problems could be referred to the Council by the State Government as also other institutions. The Institute believes that in this way the knowledge gained and developed at the university will have a interface with real situations and help add luster and life to higher education. The role of universities in the National Literacy Mission will also come up for discussion at the meeting.

The proposal from Vikram University seeks redesigning of course modules of the National Education Test for Junior Research Fellowships offered by the UGC and CSIR. It calls upon the UGC and CSIR to allocate funds to universities to conduct coaching classes for the intending students for National Education Test to give them proper guidance and coaching in developing cognitive activities like comprehension, analysis, evaluation, understanding, deductive and inductive reasoning, etc.

Birla Institute of Technology, Mesra has proposed that a recommendation from the Association be made for 100% income tax exemption to donations for endowment purposes as against the present 50%, subject, however, to the overall 10% of the donor's total income.

The proposal from Goa University calls for setting up of community colleges for the development of middle level professional manpower. Apart from reducing the number of youth adding to the ranks of the unemployed, the community college will give a vocational direction to the education system and also meet the craze for university degrees. It is suggested that atleast one community college in each state is established during the Eighth Five Ye Plan as an experimental measur Vikram University has propose the establishment of a trainin institute for imparting training entrants to the service cadre middle and higher level education administrators.

A proposal from Tripura Un versity seeks waiving the clau pertaining to minimum teachin experience for appointment to th posts of Readers and Professors i the universities in respect of resear scholars working in research inst tutes. It is claimed that this wi not only ensure mobility of scholar to and from universities an research institutions, but will als help avoid wastage when many research scholar leave a project i the research institutes half way t join as a lecturer in a university a college. By another proposa Tripura University has suggeste that the clause that the Ph. D scholars must work within th territorial jurisdiction of the unive sity be dispensed with to enable th research scholars to work in speci lised institutes under the guidanc of recognised experts who may b stationed not within territori jurisdiction of the university.

A proposal from Haryana Agri cultural University (HAU) seeks study of the existing rules and pro cedures for the appointment of Vic Chancellors for formulation of un biased and uniform procedure. HA will also like the General Body the Vice Chancellors to discuss th issue of periodic assessment, moni toring, accountability and evalua tion of teachers. Apart from th internal system to assess the accoun tability and evaluation by univer sity authorities, it is proposed tha the services of reputed academician and other educational institution should also be utilised. Similarl

proposal from Alagappa Uni-
ty would like the General Body
iscuss the issue of identifying
ist areas in research. It hopes
lving a mechanism and identify-
thrust areas will broaden the
be and utility of socially relevant
earch. Other issues likely to
ne up pertain to institution of
owships by universities, housing
ilities for faculty, students and
-teaching employees, examina-
n reforms, establishment of regio-
centres of UGC and setting up
co-operative bookshops on the
versity campuses.

The General Body will also have
its consideration the reports of
visiting committees for regular membership of Kashi Vidyapith and Gulbarga University. It will also consider the applications for admission from Indira Gandhi Krishi Vishwavidyalaya, University of Agricultural Sciences, Dharwad, Avinashilingam Institute of Home Science and Education for Women, North Gujarat University and Tripura University. Another important item to come up for discussion will be the removal of Vice Chancellors of Bihar and Madhya Pradesh universities.

A special discussion on 'Making the University System Work' will be organised on 7 December. Two theme papers, one by Prof. Rais Ahmed, Former Vice-Chairman, University Grants Commission and the other by Shri Anand Sarup, Chairman, National Book Trust will be presented. Panelists for the discussion include Shri Anil Bordia, Education Secretary, Ministry of Human Resource Development, Govt. of India; Prof. P. N. Srivastava, Member, Planning Commission; Prof. G. Ram Reddy, Vice Chancellor, Indira Gandhi National Open University; Prof. V.C. Kulandaiswamy, Vice Chancellor, Anna University; Prof. Moonis Raza, Vice Chancellor, University of Delhi; Prof. A Gnanam, Vice Chancellor, Madras University; and Prof. R.P. Rastogi, Vice Chancellor, Banaras Hindu University. □

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United Nations Week at Osmania

The Osmania University Library in collaboration with the ICSSR Southern Regional Centre organised a week long programme to celebrate the United Nations Day by organising Book Exhibition, a film show, a symposium, an Elocution Competition and Orientation for the students and researchers to the United Nations Depository collection.

The U.N. Week and Book Exhibition was inaugurated by Dr. S.K. Verma, Director, Central Institute of English and Foreign Languages. Prof. K. Madhusudhan Reddy, Principal, University College of Arts & Social Sciences, Osmania University delivered the keynote address while Prof. E.G. Parameshwaran, Director, ICSSR-SRC, presided.

Mr. N.B. Inamdar, University Librarian, explained the objectives of organizing the programme and invited the student community and researchers to avail of this opportunity to know about the U.N. and its various agencies and their contribution to the world peace and social and economic development of the people of the world by listening to experts and referring the documents displayed and available in Depository collection.

Prof. S.K. Verma in his inaugural address traced the developments that led to establishment of this world organisation. He said that various agencies, particularly the ones devoted to Economic, Social and Cultural programmes were trying to build firm bases of peace in this maddening world of cut-throat competition and hunger for power. He appreciated the commendable work being done by U.N. and its agencies for removing illiteracy and ignorance and creating a spirit in the minds of men for peace, justice, and freedom. Prof. Verma said that U.N. deserved the support of the entire world so that it could achieve its objectives.

Prof. K. Madhusudhan Reddy, who delivered the keynote address, pointed out the dichotomy of values that were implicit in this organisation and aspirations of the people of the 3rd world countries. Prof. Reddy was of the opinion that world powers were not allowing the United Nations to play its role effectively. Maybe limited wars but they were fought in more numbers after the United Nations came into existence. He deplored that in spite of this world forum the areas of tension have shifted to the 3rd world countries and acting as big hindrance in their efforts of social, economic and cultural uplift of vast masses. He, however, held that in spite of all these shortcomings there was no alternative to this Body and therefore, it need be supported, particularly by the people in 3rd world countries.

In his presidential remarks Prof. E.G. Parameshwaran dwelt upon the contribution of Unesco, FAO, UNICEF and other agencies and said one had to give proper weightage to their activities and particularly mentioned about Adult Education and Child Health Programmes. Certainly, the atmosphere created by the United Nations and its various agencies was conducive for a better world, he concluded.

To mark the occasion, a Symposium of Unesco's contribution to Social and Cultural Development of the world was also organised at which Prof. J.V. Raghavendra Rao of Dept. of Sociology and Prof. Rama S. Melkote of Dept. of Political Science were the main speakers.

Prof. Raghavendra Rao, said that Unesco was taking care of psychological factors through its welfare activities like education, cultural development, scientific an technological aspects, and communication, and striving to develo the human resources. He emphasised the point that such effort could lay the foundation for bette understanding and appreciatio among the people of the world. H dwelt at length about the project to illiteracy, child welfare, removing of hunger and diseases that ar being supported by Unesco. H particularly mentioned about scientific and technological activities i the third world countries which would help the younger generatio to enter the 21st century with greater confidence and competence

Prof. Rama S. Melkote, was o the opinion that ideas and ideals pursued by Unesco were of great value. She cited various resolutions passed by Unesco in 1972 in furtherance of peace and understanding, removal of racial discrimination, respect for human rights, etc.

Prof. Radhakrishna Sharma the Director of the Symposium said that Unesco had propounded that cultural heritage of any country was not its preserve, but it was a preserve of the entire world. He felt that the role of Unesco in propagation of ideas relating to education and culture were bound to contribute to creating a better environment that will lead to the lasting peace on earth.

The Osmania University Library is a Depository of the United Nations Documents and a member of Unesco Club. It receives documents from the United Nations and its various agencies as a part of this depository arrangements. There are at present seven thousand United Nations Documents including, verbatim debates of the Security Council and General Assembly and other important reports from the various agencies of United Nations. By celebrating this week long programme, the Library brings to the notice of Post-graduate students, researchers and faculty members the invaluable collection available in the U.N. Section of Osmania University Library for study and research.

World Congress on Universities in Development

The Fourth World Congress of he Departments of French Studies s being held in New Delhi between 14-20 December, 1988 to discuss he role of Universities in development in the specific context where French language is the instrument of communication. Hosted by the Jawaharlal Nehru University, the Congress is being organized under the aegis of the Canada based Association of Universities where French is taught or is a medium of instruction (AUPELF). The New Delhi Congress would highlight the role the teaching and learning of French can play in creating awareness of the issues of progress and change and in contributing to their problem solving in a comparative framework. Over 250 delegates from about 180 universities from India and abroad are expected to participate in the Congress which is being held for the first time anywhere in Asia.

AUPELF, which is a non-Governmental International Association came into being in 1961. It is a multi-disciplinary international forum with a world-wide membership of 180 Universities and 400 Departments of French Studies. It seeks to offer a permanent platform for University Institutions to evaluate and assess the role of universities in national and international life and their role in promoting socio-cultural development of their respective societies.

AUPELF is an associate member of the International Association of Universities and has consultative status with UNESCO.

Chair in Applied Economics

The University Grants Commission (UGC) has instituted a chair in applied economics which will be available to an outstanding scholar from SAARC countries with established reputation and significant contribution in his field of specialisation.

The chair will be located either at the Delhi School of Economics, Delhi University or at the Gokhale Institute of Politics and Economics, Pune (Maharashtra).

The tenure of this Chair would be of two years extendable by one more year. Besides the Chair, the UGC has also approved the institution of six SAARC fellowships and 12 scholarships to be made available at different universities and institutions.

The six fellowships, each of one year duration, would be awarded to experienced scholars with published works of high quality from SAARC countries. These will be in the fields of education, environment, agriculture, mass communication, language and literature, transport engineering and applied economics.

The 12 scholarships have been slotted for master's programme in business administration, bio-chemistry, social work, food technology and home science for women.

The University Grants Commission would be the local agency for scrutinising the applications for all the 19 scholastic positions received from the member countries through SAARC secretariat.

Similarly, nominations of Indian nationals will also be made by the UGC through the Government of India for SAARC countries.

Prof. Pitke named for the World Body

Prof. M.V. Pitke of the Tata Institute of Fundamental Research (TIFR) and Director, Centre for the Development of Telematics, has been appointed by Prof. Abdus Salam Nobel Laureate, to be a member of the steering committee of the International Centre for High Technology and New Materials.

This appointment is in recognition of the pioneering efforts undertaken by Prof. Pitke to propagate indigenous and self-reliant development of electronics, computer and information technology in the third world countries.

A group of scientists, headed by Prof. Pitke, has already been working on the project at the International Centre for Theoretical Physics.

Funded by the Italian Government the International Centre for High Technology and New Materials, headed by Prof. Abdus Salam, will strive to help the developing countries in the indigenisation and development of high technology and new materials through dissemination of the state of the art technology in the areas of computers, electronics and information. The centre has a unique objective of bridging the technology gap between the developing countries and the developed countries, especially in the frontier areas of computers and informatics.

The appointment of an Indian scientist to the steering committee of an international centre is also a recognition of the leadership provided by India in the field of high tech indigenisation.

UGC Grant for Gandhi Varsity

Mahatma Gandhi University, which was recognised by the University Grants Commission (UGC) only recently has been sanctioned Rs. 75 lakh as the first grant by the UGC. The grant has to be utilised during the remaining one-

and-a-half years of the Seventh Plan. Rs. 20 lakh has been sanctioned for the university library and Rs. 28 lakh each for hostels for women and men.

The State Government was expected to bear 25 per cent of the cost of the women's hostel and 50 per cent of the cost of the men's hostel.

Research Facilities in Materials Science

Thapar Corporate Research and Development Centre (TCRDC), an integral part of the Thapar Institute of Engineering and Technology, Patiala (TIET), has selected Materials Science as one of its major research areas. At present the Materials Science Division is very well equipped for carrying out the processing, characterization and evaluation of different materials. The existing facilities include Scanning Electron Microscope, Hydraulic Press, X-Ray Diffractometer, Image Analyser, Vacuum and other atmosphere furnaces, Powder making equipments, Metallographic and powder characterization instruments.

The research is carried out in the fields of Powder Metallurgy, Alloy Design and Development, Composite Materials and Ceramics. In addition to the projects in these thrust areas, the Division is providing services to various industries for Materials Analysis and Failure Analysis of structural components.

At present work is in progress under three projects: Development of Electrical Contact Materials; Development of Rare Earth Permanent Magnets; and Computerized Alloy Design and Development.

New Dept. of Science Set Up

The Government of West Bengal is reported to have created a new Department of Science and Technology.

A council was set up with the Chief Minister as the Chairman, at the inaugural meeting of the Department held recently. Dr. D.K. Bose, Vice-Chairman of the state planning board, was appointed the Vice-Chairman of the council. Distinguished scientists Dr. Sushil Mukherjee, Dr. Ramen Poddar, and Dr. B.D. Nag Choudhuri were present.

According to sources, it was decided that the council would encourage and monitor research in the field of energy, bio-technology and plant chemistry.

Lasers for Physicists & Chemists

A 7-day Workshop on Lasers for Physicists and Chemists was recently organised at the Department of Physics, Dr. Harisingh Gour University. The first of its kind to be held in the State, the Workshop was sponsored by MAPCOST, DST, INSA and BARC.

Prof. T.S. Murty, former Director General of the M.P. Council for Science & Technology who inaugurated the Workshop stressed that there should be proper and effective relationship between scientists and planners at the state level. He called upon the funding agencies to finance the Universities in a big way. He advised the researchers to move out of their laboratories and develop contacts with people and their leaders. Prof. Murty lauded the contribution of Pandit Nehru in the area of science and technology and said that there can be no technology without basic scientific research.

Mr. M.L. Jain, the Vice-Chancellor of the University, highlighted the benefits of the laser technology.

Fourteen leading laser specialists and 30 participants attended the workshop.

Commonwealth of Learning

Prof. G. Ram Reddy, the Vice-Chancellor, Indira Gandhi National Open University, is reported to have been appointed on the board of governors of the Commonwealth of Learning.

Headed by Lord Briggs, distinguished historian and authority on broadcasting and communication, the 'Commonwealth of Learning' has been created to widen access to opportunities for learning throughout the Commonwealth.

Academy of Adventure

The State Government of Gujarat is reported to have decided to set up an Academy of Adventure to encourage cultural and adventurous activities.

The academy will set up the necessary infrastructure to train youth in mountaineering, trecking, boating and sea-faring activities.

News from Agril. Varsities

BAU Emphasises Dryland Farming

Birsa Agriculture University (BAU) has laid special emphasis on oilseeds and pulses in its consistent endeavour to perfect technological innovations which could take out the farmers from the present morass and lift the subsistence farming to the stage of productive farming.

Within the overall framework of resource optimisation the dry land technology has basically aimed at maximising Kharif prouction and growing remunerative abi crop thereby increasing the ropping intensity and better land tilisation. Various facets of crop roduction have been integrated into viable, stable and remunerative, echnology. Cropping system have een evolved for different land situations, such as inter-cropping for uplands and sequence as well as relay cropping for medium lands.

For uplands, emphasis has been placed on crop diversification through drought resistent crops like Sorghum and Madua (Ragi) Soybean and Groundnut and other productive crops like maize.

Due attention has been given to tailor crop varieties of proper maturity having drought resistant capacity and good yielding ability to suit various situations. Of the outstanding varieties mention may be made of Brown Gora 23-19 Birsa Madua-1 Sunaina in green gram Birsa Aulthi-1 in horse gram, Swarnarekha in peas, Birsa groundnut-1, 2 and 3, Priya in French been, etc. For dryland technology to succeed it has to be viewed as a system rather than a conglomeration of individual crops.

National Seminar on Forestry Education

Wideranging changes in the forestry education and training system to meet research and management needs, have been suggested by forestry experts and educationists at a national seminar on "Forestry education and trainings in India," at the Forests Research Institute. Dr. R.M. Singhal, Secretary, Society of Indian Foresters, said the introduction of forestry as a subject in school has been suggested as also post-graduate and doctoral courses. The curriculum at the higher level should include courses in mass education.

A two-way movement of scientists from universities into research establishments of Forests Departments and forests officers into universities has been suggested.

Terming the present two-year training for Indian Forest Services probationers as inadequate, the experts at the seminar have suggested additional eight months of job orientation. Probationers should also be attached to national institutes of the region so that they come to understand the local problems.

Every five years, a short course at the Indian Institute of Forestry Management, Bhopal, was also recommended.

News from UGC

INSAT-1B Programme of UGC

Between 21st December to 31st Dec., 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

21.12.88

"Mechanics of Metal Cutting"
"Flint Implements"
"Cytoskeleton"

22.12.88

"Sequential Circuits"
"Understanding Poetry—III"
"Srinivasa Ramanujan"

23.12.88

"Philosophy of Science—Of More and Less—I : A Tour in Philosophy of Science"
"Ethnographic Film—Different "Perspectives"
"Erosion Central"

24.12.88

"Literature & Music—II"
"Heiner Scheppers—A Puppetear"

25.12.88

No Telecast

26.12.88

"The Unstable Nucleus"
"Linear Programming"
"Water Spider"

27.12.88

"The Ceramic Art in Japan"
"Domains of Learning"
"Pancha Karma—II : Pradhan Karma"

28.12.88

"Science and Technology & the Universities—An Interview with Dr. V.S. Arunachalam"
"Cartography : Interpreting Maps—I"
"Condemned to Progress"

29.12.88

"Logic Circuits"
"Fossils : Stories in Stone"
"How to Read a Contemporary Poem I"

30.12.88

"Philosophy of Science—
Of More and Less-II
From Quality to Quantity"

"Ethnographic Film—I Monologue"
"Dearer than Diamonds"

31.12.88

"Literature & Music III"
"Home Science goes to the Village"

News from Abroad

High-Tech Network for Australian Universities

Australia's higher education institutions will be linked by a sophisticated computer network under a proposal agreed to by university and college bodies. The joint plan will see the development of a National Academic Computer Network linking the nation's 21 universities and 43 institutions of higher education. Academics and administrators will be able to communicate directly with each other and colleagues in New Zealand and other countries, exchanging letters, research data, reports and statistics.

The decision to proceed with development of the network follows months of work by a joint steering committee of the Australian Vice-Chancellors' Committee and the Australian Committee of Directors and Principals. The Chairman of the Committee, Professor Ken McKinnon, Vice-Chancellor of The University of Wollongong, said that the network was an essential development for higher education. This network will give academics the chance to co-operate more easily in their research," he said. "They will be able to 'talk' to each other across the country, discussing their work without moving from their desks."

Professor McKinnon said the network would eventually give staff access to specialised facilities such as supercomputers, design software, databases and the preparation of graphics. The network will have a dedicated overseas link so that staff can link to international computing facilities—particularly important for academics who are part of an international community with specialist interests.

विद्यार्थियों / अध्यापकों के लिये शुभ संदेश

पठन-पाठन प्रक्रिया में सुविधा के लिये भारतीय विश्वविद्यालय संघ कई वर्षों से स्नातक व स्नात
स्तर के विभिन्न विषयों पर अंग्रेजी भाषा में प्रश्न-बैंक प्रकाशित करता रहा है। इन प्रकाशनों में उप
सामग्री एवं सूचना शिक्षकों एवं विद्यार्थियों के लिये अत्यन्त उपयोगी सिद्ध हुई है।

हिन्दी भाषी प्रांतों के शिक्षकों एवं विद्यार्थियों की लम्वे समय से चली आती मांग को पूरा करने के
प्रश्न-बैंकों की इस श्रृंखला को हिन्दी भाषा में प्रकाशित करने का हमारा यह पहला प्रयास निश्चय
लाभप्रद सिद्ध होगा। इसी आशा के साथ प्रस्तुत है :

जन्तु विज्ञान (Zoology)	मूल्य रू० 100.00
रसायन विज्ञान (Chemistry)	,, रू० 160.00
वनस्पति विज्ञान (Botany)	(प्रकाशन में)

अधिक जानकारी के लिये लिखें अथवा सम्पर्क करें —

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नई दिल्ली-११०००२

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

RESEARCH IN PROGRESS

A List of Research Scholars Registered for Doctoral Degrees of Indian Universities

SOCIAL SCIENCES

ychology

1. Singh, Shobha. *A study of personnel and organizational eterminants of coping strategies.* BHU. Dr. A.K. Srivastava, epartment of Psychology, Banaras Hindu University, aranasi.

ocial Work

1. Kaxi, B.T. *A Study of the Muslim Satyashodhak Mandal as a social reform movement in Maharashtra.* Shivaji. Dr. A.D. Madgulakar, Chh. Shahu Central Institute of Busi-ess Education and Research, Kolhapur.

Political Science

1. Negi, Sudesh. *Political and social approach to adult education : A case study of H P.* H.P. Dr. J. Alam, Assoc. Prof., Department of Political Science, Himachal Pradesh, University, Shimla.

Economics

1. Lalan, Brikhesh Chandra Lal. *The role of foreign aid in the economic development of Nepal.* BHU. Dr. G.D. Mishra, Department of Economics, Banaras Hindu University, Varanasi.

Education

1. Radhakrishnan Nair, N.R. *Historical development of sports in Kerala during post independence period, 1947-1957.* Kerala. Dr. Jayant Mukerji, Lakshmibai National College of Physical Education, Trivandrum.

Home Science

Agarwal, Anjana. *Effect of essential oils as protectant against pulse beetle cellasobruchus chinesis Linn, infecting pulses during storage and their impact on nutritive value and acceptability of these species.* Delhi. Dr. K.K. Kapur, Head, Department of Community Resource Management, Lady Irwin College, New Delhi.

HUMANITIES

Philosophy

1. Anuradha. *The problem of religious knowledge.* Panjab. Prof. Dharmendra Goel, Department of Philosophy, Panjab University, Chandigarh.

2. Francis Nur Mahi. *A critical analysis of the concept of ultimate reality in the old and new testament.* Devi Ahilya. Dr. R.S. Sharma, Prof. and Head, Department of Philosophy, Indore Christian College, Indore.

3. Sherly, N.R. *Ordinary language philosophy : A study.* Kerala. Dr. D. Nesy, Lecturer, Department of Philosophy, Govt. Women's College, Trivandrum.

4. Simon, Satish Smart. *Kaling Tood ke darshan ka alochanatmak adhyayan.* Devi Ahilya. Dr. R.N. Vyas, 17/2 Raj Mohalla North Indore.

English

1. Bhalla, Anupam. *Familial conflict in the selected plays of Arthur Miller.* HP. Dr. B,S. Pathania, Department of English, Himachal Pradesh University, Shimla.

2. Chandel, Narvir Singh. *J.D. Salinger and Churning of faiths : Zen Vedanta, Christianity Tantra : A study of the spiritual and secular crisis of the Salinger Here.* HP. Dr. Priya Vrat Bisht, Department of English, Govt. College Mandi.

3. Jacob, P.J. *Myth and ritual in the novels of Raja Rao and R K. Narayan.* Kerala. Dr. N. Viswanathan, Prof., Institute of English, University of Kerala, Trivandrum.

4. Nair Rohini *Desire in Southern experiene as reflected in the short stories of Endora Welty, Carson McCullers and Flanney D' Connor.* Kerala. Dr. K. Radha, Reader, Institute of English, Univrsity of Kerala, Trivandrum.

5. Prabhakar. Paresh K. *Jerome David Salinger's Glass Family : An interpretation.* HP. Dr. Som P. Sharma, Department of English, Himachal Pradesh University, Shimla.

6. Puri, Satya Pal. *Mythical and fabulistic mode in the novels of William Golding : A select study.* HP. Dr. Shyam M. Ansari, Department of English, Himachal Pradesh University, Shimla.

7. Santosh, B. *The aesthetics of Indian paralled cinema 1970-88.* Kerala. Dr. V. Rajakrishnan, Reader, Department of English, University of Kerala, Trivandrum

8. Sharma, Inder Dev. *Sri Aurobindo's Savitri : A study in perspective; a jungian interpretation.* HP. Dr. Priya Vrat Bisht, Department of English, Govt. College, Mandi.

9. Unnithan, M. Gopalakrishnan. *The use of English in Trivandrum City : A socio linguistic study.* Kerala. Dr. V. Syamala, Prof., Department of English, All Saints College, Trivandrum.

10. Varma, B. Kerala. *The self in Roethke's poetry.* Kerala. Dr. A. Jameela Beegum, Lecturer, Institute of English, University of Kerala, Trivandrum.

11. Yadav, Manasvi. *Depiction of Sikh culture in Indo-English fiction.* Panjab. Prof. Darshan Singh, Department of Guru Nanak Sikh Studies, Panjab University, Chandigarh and Dr. R.K. Srivastava, Prof., Department of English, Guru-Nanak Dev University, Amritsar.

Sanskrit

1. Charuvila, Manimohanan M. *The spotavada of Bhartrhari and the logos theory of Plato : A comparative study.* Kerala. Dr. Jacob Kattackal, Centre for Vedanta Studies, University of Kerala, Kariavattom.

2. Garde, Radha. *Ras Chandrika ka kavya shastriya adhyayan.* HS Gour. Dr. Radha Ballabh Tripathi, Prof. and Head, Department of Sanskrit, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

3. Jain, Ravinder Kumar. *Amitgatikrit Yogsaar prabhrit ka sameekshatmak adhyayan.* BHU. Dr. Kamlesh Kumar Jain, Lecturer, Department of Jain Baudh Darshan, Banaras Hindu University, Varanasi.

4. Khiste, Vinod Kumar. *Mahamahopadhyay Narayan Shastri Khiste Mahabhaganam : Vyaktitva Krititvanch.* BHU. Dr. Shiv Dutt Sharma Chaturvedi, Department of Sahity Banaras Hindu University, Varanasi.

5. Pandey, Chander Bhushan. *Malviya Mahakavyas samalochanam.* BHU. Dr. Chander Mouli Dwivedi, Depar ment of Sahitya, Banaras Hindu University, Varanasi.

6. Pandey, Rajender. *Jarasandhvadh Mahakavyas samaloehanahnakam adhyayanam.* BHU. Dr. Chander Mou Dwivedi, Department of Sahitya, Banaras Hindu Universit Varanasi.

7. Shukla, Rajender Prasad. *Shuklayajarvediya parishisht nam parisheelanam.* BHU. Dr. Kailash Chander Sharma Dav Department of Veda, Banaras Hindu University, Varanasi.

8. Tiwari, Ram Bharat. *Radha Charit mahakavyasy sameekshatmakamadhyayanam.* BHU. Dr. Shiv Dutt Sharm Chaturvedi, Department of Sahitya, Banaras Hindu University, Varanasi.

9. Tiwari, Ramanand. *Eksheshadhikar vimarshah.* BHU Dr. Ramesh Chander Panda, Department of Vyakaran Banaras Hindu University, Varanasi.

10. Trivedi, Krishan Mohan. *Vidhivindanamah : Sameekshatmak adhyayanam.* BHU. Dr. Chandrama Pandeya, Reader, Department of Jyotish, Banaras Hindu University, Varanasi.

11. Unnikrishnan Nair, C.R. *The concept of yoga in the yogasutra of Patanjali in comparison with mysticism.* Kerala. Dr. Jacob Kattackal, Centre of Vedanta Studies, University of Kerala, Kariavattom.

12. Vasantha Prasad, M.C. *The bhakti concept of Ramanuja and the Biblical doctrine of faith : A comparative study.* Kerala. Dr. Jacob Kattackal, Centre for Vedanta Studies, University of Kerala, Kariavattom.

Punjabi

1. Ajit Singh. *A critical study of geographical and cosmological references in the Janamsakhis.* Panjab. Prof. Surinder Singh Kohli, School of Punjabi Studies, Panjab University, Chandigarh.

2. Avtar Singh. *Nirgun kavya de sandarbh vich Bani Bhagat Namdev : Ek vivechan.* Panjab. Prof. Darshan Singh, Department of Guru Nanak Sikh Studies, Panjab University, Chandigarh and Dr. Dharam Singh, Reader, Department of Punjabi, Guru Nanak Dev University, Amritsar.

3. Harbans Kaur. *Medieval Indian society as reflected in the Bani of Guru Nanak.* Panjab. Prof. Darshan Singh, Department of Guru Nanak Sikh Studies, Panjab University, Chandigarh and Dr. Mohinder Singh, Director, Guru Nanak Foundation, New Delhi.

4. Sharma, Vas Dev. *Cosmic view of life in Guru Nanak bani.* Panjab. Prof. Darshan Singh, Department of Guru Nanak Sikh Studies, Panjab University, Chandigarh and Dr. S.S. Bhatti, Chairman, Department of Physics, Panjab University, Chandigarh.

Hindi

1. Chandrasekhar, Raji. *Adhunik Hindi geeth sahitya rekshtra navanirman ke pariprekshya mein.* Kerala. Dr. N. Chandrasekharan Nair, Prof. and Head, Department of Hindi, M.G. College, Trivandrum.

Girija Kumari, R. *Individual and social consciousness poetry of Sarveswar Dayal Saxena.* Kerala. Dr. V.V. m, Prof., Department of Hindi, Govt. Women's College, ndrum.

Sethunathan Achary, R. *Kathakar Ajneya ka patra aigyanik adhyayan.* Kerala. Dr. M. Suresh, Lecturer, rtment of Hindi, S.N. College, Quilon.

yalam

Anilkumar, K. *Evolution of poetic language in Mala-n.* Kerala. Dr. P. Ramachandran Pillai, Prof. and Head, rtment of Malayalam, University of Kerala, Trivan-n.

raphy

Anil Kumar. *Population migration in Madhya Pra- : A geographical analysis.* HS Gour. Prof. R.S. Dube, der, Department of Geography, Dr. Harisingh Gour wavidyalaya, Sagar.

Jain, Avanesh Kumar. *Environment food habits and iency diseases in tribal areas of the Batul Chhindwara eau, M.P.* HS Gour. Dr. P.D. Tiwari.

Jain, Rekha. *Urban growth and quality of life : A geo-hical study in cities of Madhya Pradesh.* HS Gour. Dr. Srivastava, Reader, Department of Geography, Dr. Hari h Gour Vishwavidyalaya, Sagar.

4. Jain, Savita. *Educational levels in Madhya Pradesh : A geographical analysis.* HS Gour. Dr. D.S. Srivastava, Reader, Department of Geography, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

5. Mishra, Seema. *Ecosystem, food consumption, nutritional and health status of Baiga's in Dindori Tahsil, Mandla District M.P.* HS Gour. Dr. P.D. Tiwari.

6. Mulay, S.B. *Agricultural land use and land degradation in Goa.* Shivaji. Dr. S.D. Shinde, Prof. and Head, Department of Geography, Shivaji University, Kolhapur.

7. Patil, J.B. *Spatial organization and linkage of agricultural regulated markets in Upper Krishna Basin.* Shivaji. Dr. P.W. Deshmukh, Reader, Department of Geography, Shivaji University, Kolhapur.

8. Shinde, S.R. *A study of some aspects of horticultural development in Maharashtra Plateau Region.* Shivaji. Dr. K.S. More, Department of Geography, Shivaji University, Kolhapur.

9. Soni, Manoj Kumar. *Industrialisation ana rural transformation in the Indore, Dewas Ujjain industrial traingle region of Madhya Pradesh.* HS Gour. Dr. S.K. Shukla, Reader, Department of Geography, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

History

1. Pandey, Rakesh. *Transfer of power, 15th August, 1947.* BHU. Dr. J.P. Mishra, Department of History, Banaras Hindu University, Varanasi.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

chology

1. Joshi, Renuka. *A study of creativity in relation to sonality, locus of control and alienation.* Panjab.
2. Kolarkar, Shakuntala Sharadchandra. *What weighs in selection of a life-partner ?* Nagpur. Dr. C.G. Pande, partment of Psychology, Nagpur University, Nagpur.
3. Krishnan, Usha. *The role of motivational and cognitive tors in the differences of person perception and liking for ers.* Durgawati. Prof. R.K. Gurnani, 11/1 Matre Chhaya, igh Town, Jabalpur.
4. Madhumati. *An exploration into some socio-psycho-ical antecedents of fear of crime.* Magadh.
5. Malhi, Prabhjot. *Concept and prose learning in children a function of individual and stimulus differences in imagery.* njab.
6. Pradeep Kumar. *Patterns of educational interests in lation to creativity.* Rohilkhand. Dr. Gopal Sharan, Govt. aza PG College, Rampur.
7. Satish Kumar. *Organizational and personal determin-ts of job involvement and job satisfaction of supervisors in blic and private companies.* Magadh.

ciology

1. Patnaik, Ajay Kumar. *Patterns of urbanization and owth of working class in the Soviet Union, 1950-1975 : A case study of Soviet Central Asia,* JUN. Prof. R.R. Sharma, Centre for Soviet And East European Studies, Jawaharlal Nehru University, New Delhi.
2. Shrivastava, K.K. *Tribals and forest industries of the Bastar Region of M.P. : A socio-economic study.* Bhopal. Dr. I.S. Chouhan, Prof. and Head, Department of Sociology, Bhopal University, Bhopal.
3. Thakur, Damyanti. *Chhatra asantosh : Guru Ghasidas Vishwavidyalaya ke snatakottar vidyarthiyon ka ek samajshastriya adhyayan.* Ghasidas. Dr. P.K. Thavait.

Political Science

1. Banjamin, K. *American strategic interest in Persian Gulf.* Osmania.
2. Bhattacharya, Bharati. *Bharat kee asanglagnata ke prati Soviet Sangh ka drishtikon : Ek adhyayan.* Ghasidas. Dr. R.N. Mitra.
3. Gupta, Akhilesh. *Swami Vivekanand ke rajnitik evam samajik vichar.* Rohilkhand. Dr. N.C. Mehrotra, SM College, Chandausi.
4. Joshi, Rekha. *Swatantrata prapti ke pashchat Dakshin-Pashchim Madhya Pradesh kee adivasi mahilaon mein rajnitik chetana evam sahabhagita.* Devi Ahilya. Dr. Arvind Maru, University Boarding House, A. B. Road, Indore.
5. Kanwar, Anila. *Gandhiji ke prajatantrik vikendrikaran sambandhi vicharon ka vartman mein mahatva.* Vikram. Dr. Ajhar Hashmi, Department of Political Science, Govt. College Ratlam.

6. Lalchungunga. *Regionalism in Mizoram politics.* NEHU. Prof. C.N. Bhalerao, Department of Political Science, North Eastern Hill University, Shillong.

7. Sindhu, I.D. *Trends in voting behaviour : A comparative study of the 1977, 1980 and 1982 elections in six Assembly Constituencies of Himachal Pradesh.* HP.

8. Thirupathi Reddy, K. *Legislative process in India : Role of the Speaker in the A.P. Legislative Assembly 1956-87.* Osmania.

9. Vijayalakshmi, K.P. *The United States and the Non-Aligned Movement with special reference to the New World Information Order, 1969-1980.* JNU. Prof. R.P. Kaushik, Centre for American and West European Studies, Jawaharlal Nehru University, New Delhi.

Economics

1. Adeshola, Olunuga O. *Financial management in commercial banks : A study of selected Indian banks.* Baroda.

2. Agarwal, Shalabh Kumar. *Bycycle Industry in Haryana.* Rohilkhand. Dr. D.K. Kulshreshtha, Hindu College, Moradabad.

3. Gupta, Neeta. *Management of nationalised Bus Transport in Punjab.* Rohilkhand. Dr. D.K. Kulshreshtha, Hindu College, Moradabad.

4. Gupta, Sandhya. *Madhya Byarat kshetra mein shram sanghon ka vikas, uplabdhiyan evam vartman samasyayen.* Vikram. Dr. (Mrs) T.K. Vazdi, Department of Economics, Devi Ahilya Vishwavidyalaya, Indore.

5. Gupta, Shailesh Narain. *Rohikhand Mandal ke shahari kshetra mein berojgari : Ek adhyayan,* Rohilkhand. Dr. H.C. Gurnani, N.M.S.N. Dass College, Budaun.

6. Khare. Rajendra Kumar. *Farm business analysis of agro-climatic regions of Madhya Pradesh.* Durgawati. Dr. R.R. Chaurasia, GII, Krishi Nagar, Adhartal, Jabalpur and Dr. P.C. Shrivastava, Kamla Sadan, Yadav Colony, Jabalpur.

7. Parvinder Kaur. *Agriculture in mineral economics : Nigeria and Gabon.* Delhi.

8. Sundari, S. *Economic aspects of nationalisation of bus transport in Tamil Nadu.* Bharathidasan.

Law

1. Mool Singh. *Indian criminal jurisprudence and Justice Krishna Iyer : An appraisal.* Rajasthan. Prof. T. Bhattacharya, C-9 University Campus, Jaipur.

Public Administration

1. Singh, Manoranjan Pd. *Materials management in Bihar State Electricity Board.* Magadh.

Military Studies

1. Gautam, Hem Kumar. *Geo-political study of South-West Asia since 1970.* Rohilkhand. Dr. O.P. Sharma, Bareilly College, Bareilly.

2. Khan, Azmat Ullah. *A critical study of evolution of Indian Army, 1757-1857.* Rohilkhand. Dr. O.P. Sharm Bareilly College, Bareilly.

Education

1. Agarchand, Satishkumar. *A study of teacher effectiv ness among different groups of teachers in relation with pe sonality traits.* Patel. Dr. A. V. Patel, Lecturer, M.B. Pat College of Education, Sardar Patel University, Vallab Vidyanagar.

2. Baruah, Jyotsna. *An evaluation of pre-school instit tions in Assam with special reference to teaching methodolog* Gauhati. Dr. S. Saikia, Prof., Department of Educatio Gauhati University, Guwahati.

3. Bhasin, Chanchal. *Teaching aptitude and its relation ship with teaching effectiveness of the higher secondary schoo teachers in relation to the modern community.* Durgawati. Dr R.P Shrivastava, 1286, Jaiprakash Colony, Adhartal, Jabal pur.

4. Bhupendra Singh. *A study of some possible contribut ing factors to high and low achievement in Mathematics of th high school students of Orissa.* Sambalpur. Dr. G.K. Saman taray, Prof. (Retd.), Department of Education, Roybab Kholli Jeypore, Koraput.

5. Eapen, Rachel Lalitha. *Extensive reading at the tertiary level for the low achiever : A case study.* CIEFL. Dr Rama Mathew, Department of Evaluation, Central Institute of English and Foreign Languages, Hyderabad.

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4. Entomology
5. Horticulture
6. Plant Breeding & Genetics
7. Plant Pathology

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2. Agronomy
3. Crop-Physiology
4. Agril. Bio-Chemistry & Agril. Chemistry
5. Extension Education (Agri.)
6. Entomology
7. Horticulture
8. Nematology
9. Plant Breeding & Genetics
10. Plant Pathology
11. Soil Science
12. Tea Husbandry & Technology

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3. Textiles & Clothing

(D) M.Sc. (Sericulture)

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tution on the recommendations of
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Editor :
SUTINDER SINGH

AIU ANNUAL MEETING

C. F. T. R. I., MYS

The 63rd Annual Meeting of AIU was held on the campus of Banaras Hindu University, Varanasi from December 5 to 7, 1988. Hon'ble Shri L.P. Sahi, Union Minister of State for Education and Culture, Government of India, inaugurated the meeting. He also declared open the Book Exhibition organised on this occasion. The meeting was attended by 63 Vice-Chancellors and Directors of Institutions of Higher Learning. Shri Anil Bordia, Secretary in the Department of Education, Ministry of Human Resource Development also attended the meeting and made a strong plea for the involvement of Universities in the National Literacy Mission. A special discussion on 'How to make the University system work' was organised on 7th December. Prof Rais Ahmed, former Vice-Chairman UGC & Vice-Chancellor of Kashmir University, initiated the discussions. Shri Anand Sarup, Chairman, National Book Trust, presented a paper on University Autonomy and Accountability. Shri C.R. Pillai of the Ministry of Education could not be present but his paper on "Making the System Work" was read out. Dr. B.K. Raju, Advisor on National Service Scheme of Government of India, also participated in the discussions.

Dr. A Christodolou, Secretary General, ACU, London and Dr. Hoffman, Director, German Academic Exchange at New Delhi also attended the meeting as distinguished observers.

The following universities were granted provisional membership of AIU for 3 years :

1. Indira Gandhi Krishi Vishwavidyalaya, Raipur
2. University of Agricultural Sciences, Dharwad
3. North Gujarat University, Patan
4. Tripura University, Agartala
5. Purvanchal University, Jaunpur
6. Avanashilingam Instt. of Home Science and Higher Education for Women, Coimbatore.

At the General Session the question of assessment and accountability of teachers was discussed at length. It was noted that both external and internal methods of assessment sould be tried. The disparity in the amount of fellowship made available to postgraduate students from different agencies and sources should be removed and a uniform scale of payment should be arrived at. The State Governments may be urged by the Universities to raise their amount of Scholarship to attract better talent for research work. It was felt that there is an urgent need for housing of the teachers. It was suggested that agencies like HUDCO should be encouraged to provide housing loan and the possibility of utilising the Provident Fund for this purpose may also be considered. There was a general consensus that both faculty and students should participate actively in the task of rural reconstruction.

The need for training of middle level educational administrators in the University was emphasised and the work of AIU in this area was appreciated. It was suggested to strengthen this activity further. The need for providing alternative source of funding for universities was considered. The question of inducing industrialists and philanthropists to create endowment funds in universities was considered and it was suggested that AIU should take initiative in this regard.

(Continued on page 21)

63rd Annual Meeting of
ASSOCIATION OF INDIAN UNIVERSITIES
Inaugural Address

By

Shri L.P. Sahi

Union Minister of State for Education and Culture

I consider it a great privilege and an honour to have been invited to inaugurate this 63rd Annual meeting of the Association of Indian Universities. It is very appropriate that this Conference is being organised at the BHU which is not only a premier University in the country, but, in many respects, also a very unique institution. BHU was the first residential University to be established in India. It is still the largest such University in the country. Associated with its establishment are the memories of Mahamana Pt. Madan Mohan Malaviyaji, one of the greatest sons of our motherland. He was not just a leading light in our freedom struggle; his was the voice that awakened India. His vision of the BHU was a University that made available to the country, in every field, men and women of high character filled with patriotism. Over the years, the BHU has grown; it provides programmes of teaching and research in several fields and disciplines, which no other University in the country does. It has gone through many vicissitudes. It fills us with pride, and sometimes, anxiety as well.

For many, a visit to Banaras is nothing short of a pilgrimage. When it is to meet the leaders of the academic world and to share the richness of their experience of the problems and prospects of higher education in our country, it should be a stimulating and rewarding experience as well. I notice that for your Seminar being held in conjunction with this Annual Conference, you have chosen the theme 'Making the System Work'. I am sure, from your deliberations, there will emerge a set of concrete, practical and useful recommendations that will give a new purpose and direction to the development of higher education in the country in the coming years. At the conclusion of this Conference, when you get back to your Universities, I do hope that you will find that your visit to Banaras was not only invigorating, but also enlightening.

We are meeting at a time when several issues concerning the development of higher education have been raised. The debate on the formulation of the National Policy on Education three years ago, the finalisation of the Policy, and later the Programme of Action for its implementation, have all focussed attention on several crucial areas of concern in our higher education system. The new policy itself has had a run of about two and half years now. The implementation of the policy also has thrown up many issues.

The picture of higher education that emerges from all these is none too inspiring. There are a small number of institutions which have established very high standards and are continuing their pursuit of excellence. Some of them are comparable with the best in the world. At the same time, there are far too many institutions whose standards and levels of performance leave much to be desired. They give the impression that the higher education system as a whole is not functioning. Admissions are not made on time; academic sessions are disrupted; time-tables are seldom adhered to; examinations are delyed indefinitely; and students have to wait several months, even years, to get their degrees and certificates. It is this perception of the larger system which prevails, pushing the record of performance of the small number of Centres of Excellence into the shade.

When we consider the larger system of higher education in the country, it is the large Universities and Colleges and their performance which often influence our judgement. It is important to remember that a very large part of our resources goes into these Universities, and the Colleges affiliated to them. Among them, they account for the most part of the enrolment in higher education which is now touching four million. The basic question, therefore, is whether the investment in terms of men and material in this system is yielding the desired results, and whether it is able to shape and mould the coming generations as useful members of the society. If we are honest to ourselves, our answer to these questions cannot be too positive an assertion. That leads to the next question. What do we do with this system ? And this, to my mind, is the message of the theme 'Making the System Work'.

Universities as social institutions have evolved over a long period of time. They have gone through several stages of metamorphosis. Not too long ago, Universities were described as ivory towers, far removed from the realities of life. Perhaps, this description came from the perception that a University was not an institution which was pursuing any precisely defined goals, and that it was an assembly of men and women who were relentlessly pursuing abstract knowledge for its own sake. This pursuit of knowledge was at a relatively leisurely pace. Universities were not subjected to the kind of social pressures that we are witnessing today. But, we have come a long way from this ivory tower concept. Today, Universities are as much a part of the society which nurtures it. They reflect all the tensions involved in life in modern times. There are high hopes and aspirations on the one side; there are deep disappointments and frustrations, on the other. But Universities as institutions of social engineering cannot float and drift; they have to guide the changes and manage them. Our system will work only if we stand committed to this objective.

For too long, we have been preoccupied with two major concerns which were apparently difficult to reconcile : resources and autonomy. The Universities have been deeply concerned about their autonomy. It was suggested that financial support to them should be without any strings. But as the system expanded massively, there was a sharp escalation in the cost of its maintenance. The expenditure on the maintenance of Universities and Colleges went up so high that the funding agencies, mostly the State Governments, began feeling that some kind of financial discipline was essential. Gradually, they began to impose a variety of restrictions which initially were confined to financial commitments that the Universities could make, but later extended to other spheres, creation of posts, appointments, and even affiliation of Colleges. Quite naturally, there were protests, and even resistance. The assertion of their autonomy by the Universities were met through more amendments to University legislations. If one were to look at the type and nature of amendments made to University legislations in the last two decades or so, it is not difficult to find that many of our Universities are no more as independent as they used to be. There are University legislations in our country which provide for Vice-Chancellors holding office during the pleasure of the Chancellor; where nominations of members on University Bodies are made by Chief Ministers or Ministers; the power of affiliation has been transferred to the State Governments; key functionaries like Registrars and Finance Officers are appointed by the State Governments. The effect of all these is that today there is an uneasy relationship between Universities and the State Governments.

It is not that the blame for all this should lie at the doors of the State Governments. It will not be wrong to assume that many of our Universities themselves created the conditions for such a situation to develop. It is necessary that we do some serious introspection about this. After all, Universities are public institutions. They are accountable to the Governments and the society which sustain them. It is, therefore, of the utmost importance that we take a close look at this matter and try to evolve a more meaningful University-Government relationship, a relationship based on cooperation and not confrontation, a relationship which respects autonomy within a framework of accountability. I hope that the Association of Indian Universities will take the initiative in developing workable norms that should guide this relationship in the future.

I would like to make one or two more points at this stage. It is my impression that Universities generally, and the Association of Indian Universities in particular, have been rightly concerned about the autonomy of Universities. They have devoted considerable times and effort in discussing this issue. But how is it that our Universities are so reluctant to grant autonomy to their affiliated colleges. We have been talking a great deal about the development of autonomous colleges during the last two decades. It is unfortunate that this concept has not even developed any root so far. There are reports that many Universities are reluctant to confer autonomy on their Colleges; some of them are reportedly against this concept. An institution which cannot share its powers with its own constituent units can certainly not become the protector of its autonomy.

Another major area of concern is the courses and programmes. There have been no attempts at redesigning courses, improving their relevance, introduction of new components that are useful to the students, and so on. Most courses of our Universities at the undergraduate level continue to be the old stereo-types. The U.G.C. framed guidelines for restructuring first degree courses some 10 years ago. But most Universities have not made any serious attempt with this reform. On the other hand, there are reports that some colleges and universities which have gone ahead with this redesigning of courses have run into serious trouble. The graduates who pursue the restructured courses are not able to secure admissions to postgraduate programmes. The reason, I am told, is that the Universities insist that preference for admission to postgraduate courses will be given to those who follow the stereo typed courses. This is the manifestation of rigidity in an extreme form. I would like you to ponder over this matter. We must make sure that the undergraduate courses provide for a greater measure of flexibility in the combinations of courses of various types. At the same time, we must also ensure that admission to postgraduate courses is not denied to students who undergo such restructured courses. Our Universities should find alternate methods of admissions like a common entrance test, etc., for such students, to their postgraduate programmes.

In the modern context, our Universities cannot get away from the fact that they have to function in the open. It is unlikely that they will be able to function totally free from all social pressures, or in isolation from the community. This demands a totally new approach to the processes of management of our Universities. The existing structures seem to be too inadequate to meet this situation. It should be our endeavour to involve as many people from diverse backgrounds with the processes of management of our Universities. Such a consultative process is essential in designing courses, preparing material, in evolving new teaching and learning methodologies, etc. We have also to involve educational technology in a very significant manner in the organisation of our educational programmes. If properly harnessed, educational technology can go a long way in transforming the teaching-learning processes. All this requires a new design for the management of our Universities. We cannot be dogmatic about any particular pattern or structure; we should permit a great deal more of innovation. It will do no good if institutions which have to guide and manage changes themselves become prisoners of conservatism.

The Association of Indian Universities, I am sure, will also reflect these concerns in their programmes and outlook in the future. Perhaps, what we are missing most is an effective mechanism charged with the responsibility of planning the development of higher education for the future and engaged in self-analysis and appraisal. Only if such a mechanism is developed, we will be able to encourage innovations, stimulate changes and boost the status and morale of our Universities. We have also to bring about a great deal of professionalism and corporate processes in the management of Universities and institutions of higher learning. Finally, we must ensure a great deal more of openness in the functioning of our Universities. They can no more remain in isolation from the society.

I have great pleasure in inaugurating the 63rd Annual Meeting of the Association of Indian Universities. ☐

PRESIDENTIAL ADDRESS

By

Dr. P.V. SALVI

Vice-Chancellor, Marathwada Agricultural University & President, AIU

I consider it a great privilege to welcome you all and address this distinguished gethering on the occasion of the inaugural function of the 63rd Annual meeting of the Association of Indian Universities (AIU). I am very happy that this meeting is being held at the beautiful campus of the Banaras Hindu University which is one of the oldest and prestigious Universities in the country.

Education has a long tradition in India. In ancient times teachers in our country imparted knowledge to pupils mostly from priestly classes, through religious preachings. This system which was called as "Gurukulas" expanded and developed into highly respected communities of scholars. Gradually, these centres of education developed into schools imparting instruction in various disciplines. Nalanda was one of the earliest and the largest of such seats of learning in ancient India and had several students pursuing studies in religion and other disciplines. But with the passage of time, this system of education slowly declined.

The foundation of the present University system in India was laid after the advent of the British rule in the country. This system of education was patterned mostly on the lines of the United Kingdom. It involved affiliation of colleges, formulation of courses, prescribing of textbooks, examining of students and conferring of degrees.

Around 1857, the Universities

of Bombay, Madras and Calcutta were established and this marked the beginning of the present-day University system in India. Colleges and Universities were established at different places to meet the higher education needs of the country. During the British Raj, the objective of education was to produce a class of educated persons who would work as clerks and in other positions in administrative departments of the Government. However, after achieving national independence in 1947, rapid developments started taking place in the country in economic, social, scientific, technological and administrative sectors. These developments helped accelerate the expansion of higher education. Colleges and Universities were regarded as means of providing educational opportunities and there was, therefore, a great rush of students for admissions to various courses at these institutions. The number of such educational institutions, therefore, grew very fast. This very rapid expansion without proportionate growth of infrastruture adversely affected the quality and standards of education at these centres. Many of the new colleges started in the post-independence era are not viable. Inadequate financial resources is a major constraint limiting the development of their infrastructure. Several of these colleges are located in the rural area and their lower standards of instruction deprive of equity, their students who come mostly from economically and socially backward classes. The problems of financial constraints, quality, quantity, and utility have become so serious as to warrant our immediate attention.

After the adoption of the 1968 policy of education by the Government of India, there has been considerable expansion of educational facilities at all levels. This policy was an important step in the growth of education and it aimed at accelerating the development and progress of the country. It envisaged to meet the challenges posed by the disintegrating and divisive forces, to promote science and technology and to relate education to day-to-day problems and needs of the society. A common educational pattern, namely, 10+2+3 has now been adopted throughout the country. Some restructuring of undergraduate courses has been done, though not effectively, centres for advanced research and postgraduate instruction have been set up and we are now able to meet most of our requirements of educated manpower. We may now take some pride that at present India has the third largest force of scientists and technologists in the world. These appear to be impressive achievements. However, there are many lacunae in our educational programmes. There was a lack of well defined strategy for implementing these programmes as well as for providing sufficient finances and infrastructural facilities. Most of the courses offered in the Universities and Colleges lack adequate work experience and further, they have not been redesigned to meet the changing needs of the society. Doubts are, therefore, raised about the utility of these courses; Further, the examination system is also losing its credibility due to various reasons.

Education which is fundamental to national progress is a basic right of every citizen in a democracy. It trains and develops the manpower needed by various sectors of the nation's life. In fact, education is the most valuable investment in man which prepares him for effective and meaningful participation in democratic processes and in the programmes of national development. Further, it helps to develop among people a sense of national pride and abiding faith in the future of their country.

Realising the importance of education in our national life and the need to overcome the various problems to make education an effective instrument of socio-econmic change, the Parliament approved the National Policy on Education (NPE) in 1986. This policy is conceived on the principles embodied in the Constitution of India. It implies that "all students, irrespective of caste, creed, location or sex, have access to education of a comparable quality." It proposes a common strategy and a national curricular framework containing a common core along with some flexible components. It aims at promoting quality and envisages that "minimum level of learning will be laid down for each stage of education. Steps will also be taken to foster among students an understanding of the diverse cultural and social systems of the people living in different parts of the country." For developing this understanding and respect for the various sub-cultures existing in the country and for promoting national integration, mobility of students and teachers from one region to another will also have to be encouraged.

In our educational institutions today, parochial tendencies have made inroads to such an extent that mobility of students and staff is greatly hampered. Undesirable extraneous forces, mostly non-academic in nature, are responsible for this situation which is not only very detrimental to national integration but it leads to inbreeding and mediocrity. This adversely affects the quality of instruction in our educational institutions. Mobility of students from one University to another, will have to be encouraged and facilitated by adopting such measures as reservation of seats for admissions to students from other states, grant of scholarships, etc. Retaining some positions and providing certain facilities exclusively for teachers from other states can help in attracting talented teachers from different parts of the country.

The rapid growth of our educational system and a very high number of students enrolling in colleges and universities without proportionate expansion of the needed infrastucture have adversely affected the quality and standards of our education as already mentioned by me. Another important factor influencing the quality of education is the teachers. Their job is complex, involving knowledge of their subject matter discipline and skills in communication and interpersonal relationship. They must keep themselves professionally up-to-date. However, many teachers tend to neglect these aspects. It is observed that talented persons generally are not inclined to join teaching profession. The recent revision of pay scales of teachers in Universities and Colleges introduced by the Government of India on the recommendations of the University Grants Commission and which are accepted by the Central Universities and by some of the State Universities would help raise the status of the University and College teachers. It is expected that intelligent, qualified and interested persons would now be attracted to these important teaching positions in whose hands lie the training and moulding of the future citizens of India. I hope that all State Governments would accept these revised UGC pay scales for their University and College teachers soon without any modifications.

For facilitating national development, the requirement of technical manpower will have to be assessed accurately. This is still a problem in our planning of technical education programmes. Effective linkages with user agencies like various government departments, industries, business houses and R & D centres will have to be fostered to assess the quantum and type of manpower needed by them and to reorient our programmes of technical education to suit their requirements. This will not only help in making an effective use of the professional manpower which is trained with heavy investments, but will also enable the user agencies to improve their productivity. Such an arrangement will also avoid frustration among the professionally trained persons who would otherwise remain under-employed or unemployed. Further, mutual linkages among these institutions of higher learning as well as between them and the user agencies would facilitate undertaking of joint projects of research and faculty development in addition to sharing of resources and information

In most of the professional colleges, training in skills has not been adequately emphasized. There are institutions where sophisticated equipment has been installed but it is out of order most of the time and where it is in working condition, the students have no access to it. These items of equipment have to be maintained in working condition and the students should learn to handle them as a part of their practical training, Further, an exposure to actual problems in the field and acquisition of knowledge and skills to handle these problems are essential in technical education. Work experience is, therefore, very valuable and inseparable in this education and where it is tried systematically, it has proved very effective and useful. For instance, Rural Work Experience (RAWE) has been introduced in some of the agricultural universities in India. The four Agricultural Universities in Maharashtra depute their final year undergaduate students to reside in villages for one full semester, where they undergo practicals in agriculture and extension besides studying the socio-economic conditions of the rural people. They also undertake adult literacy work. This RAWE as a mandatory part of the undergraduate degree programme has been found to be very useful and encouraging. It gives the students on-the-spot knowledge of the maladies of a rural community and the possible remedies to overcome the same. Besides, the programme benefits the villagers through agricultural extension and literacy programmes undertaken by these students. Work experience programmes in our technical education institutions will have to be strengthened and made more effective.

It is gratifying to note that the NPE has emphasised technical education for women at all levels as well as for the handicapped. The Plan of Action suggested for achieving this has to be vigorously implemented to benefit these under-privileged sections of our society.

It is unfortunate that even after 41 years of independence, nearly 64% of our population is illiterate. Having no access to formal education, participation of these people in the nation building task remains limited, besides depriving them of the fruits of development and progress. It is, therefore, natural that the Government of India has given high priority to tackle this problem and a National Literacy Mission has been formulated for this purpose. The universities and colleges with the help of their students and teachers are participating in the mass programme of functional literacy launched in the country in 1986. But much remains to be done yet in this area and we must enthuse the students, the teachers and other employees of our Universities and colleges to participate in this very important national programme of functional literacy with devotion and missionary zeal.

A large number of persons from diferent parts of India are anxious to pursue higher education. But they neither have time to attend regular classes in colleges and universities nor have these institutions the required infrastructure to cater to the needs of such a vast number of prospective learners. They, therefore, have to be reached through distance education. Correspondence courses and print and electronic media are being used by some universities for distance education programmes, but due to many reasons, these efforts have remained inadequate. Establishment of the Indira Gandhi National Open University (1985) and other Open Universities in some of the States would certainly help in furthering the cause of distance education. I hope these Open Universities succeed in their task and through the efforts of these and other Universities, the programmes of distance education become a truly successful movement in the country.

Another major problem confronting our university system is regarding examinations, which in many cases, are not conducted on schedule and results are not declared in time. There are instances where examinations lag much behind the due dates and results are not declared even after several months have elapsed after conducting the examinations. This state of affairs has reduced the credibility not only of the examinations but of the entire university system and has created a sense of uncertainty in the minds of students and parents. We have been seized of this problem for many years now. The UGC has strongly advocated and financially supported examination reforms in the universities, but no much headway seems to have been made. Development of autonomous colleges as envisaged in the NPE and internal evaluation system could be solutions to this vexing problem.

The Action Plan for implementing the NPE needs to be pursued vigorously. It has to be reviewed from time to time for bringing about the desired changes in our educational system to meet the demands of a modernising, democratic society. We as leaders of the University system have a key role to play in this task. Because of various undesirable forces operating, both from within and outside, the working of the University System is hampered, lowering its effectiveness. With your valuable experience, it would be possible to come out with useful suggestions to make this system work, since its efficient functioning is very vital for rapid socio-economic transformation of the country. It is with this objective that the AIU is organising the seminar on "Making the University System Work" at the time of this 63rd Annual Meeting.

With escalating prices, the services, equipment and facilities which can be provided with the available funds are reduced quantitatively. As a result, infrastructural facilities in Universities and Colleges have remained inadequate even when their budgets may show some rise. Though considered a vital sector of the national life, education has always remained neglected and has received a very small fragment of the national income. It is very encouraging that the NPE has envisaged an higher outlay for developing education at all levels. In this connection I would like to point out that the present procedures for releasing the budgeted grants are cumbersome and time consuming. These require to be simplified and more autonomy needs to be given to the Universities in the utilization of the budgeted funds. At the same-time, I would mention that proper use of grants and their timely accounting and auditing should receive a very high priority from the University administration.

Universities are centres of higher education, research and technology development which are expected to move to the "centre-stage". As outlined in the Programme of Action (1986) of the NPE, "they should have the freedom and responsibility to innovate in teaching and research". Autonomy means freedom to an university to plan and implement various teaching and research programmes based on the society's needs, within the budget provisions and the framework of the university Act and Statutes. Of recent, this autonomy has come under severe stresses and strains due to various forces which tend to vitiate the entire atmosphere on the university campuses. It is not uncommon that amendments are made to university Acts and Statutes, some times due to reasons not academic in nature. Such amendments have tended to erode the autonomy of the universities. The AIU has played a valuable role in helping the Universities to preserve their autonomy.

When Vice-Chancellors are arbitrarily asked to resign or are dismissed as has happened recently in some Universities in the country, the entire University system is in a disarray and its image is very badly damaged. Universities about the tenure of a Vice-Chancellor and treatment as mentioned above meted out to him who is the Chief executive and leader of the University certainly hamper the image and prestige of the university and all hopes of making the Universities move to the "centre-stage" in the programmes of national development would prove to be futile. I am happy that in the recent episode involving resignations/dismissals of some of the Vice-Chancellors, the AIU has acted promptly and appointed a committee of Elders to study this matter and make recommendations so that such humiliating incidents would not recur.

I have made an attempt to highlight some of the issues which require our immediate attention to make the higher educational system work efficiently. I am happy that the AIU has chosen this very important theme for the seminar at a very crucial stage in the implementation of the National Educational Policy and at a time when our University system is faced with numerous problems. With your rich experience and active participation, I am sure, useful recommendations would emerge out of our deliberations.

It would be appropriate if I briefly dwell upon the activities of the AIU which has since its inception played a very important role in higher education in India. At present the AIU has a membership of nearly 180 Universities, deemed Universities and Institutions of higher learning in the country. As an inter university organisation, it has been facilitating communication, co-ordination and consultations among the member universities. It acts as a representative of the Universities in India and maintains liasion between the Universities and the Government. The AIU also undertakes activities which help to improve standards of instructions, examinations, research, text books, scholarly publications and library organizations. It assists Universities to obtain recognition to their degrees, diplomas and examinations from other Universities in India and abroad. It maintains sports and cultural divisions to promote sports, youth welfare, student services and cultural programmes. The Association also organizes and facilitates conferences, seminars and workshops on topics of national importance. As mentioned earlier, the AIU has been playing an important role in helping to safeguard the autonomy of our Universities. It has always made vigorous efforts with the concerned authorities to improve the status and service conditions of the academic staff, the Vice-Chancellor and other administrators from the Universities.

Since 1987, the AIU has provided yet another very useful service to its members in the form of Orientation-cum-Training programmes for different categories of administrators from the Universities and other institutions of higher learning. Till now, such training programmes have been arranged for Pro-Vice-Chancellors, Senior Academicians, Registrars, Deputy Registrars, Assistant Registrars, Finance Officers and Public Relations Officers. This activity of the AIU has benefited not only the Universities but also the administrative personnel from the institutions/centres under the Council of Scientific and Industrial Research, the Indian Council of Agricultural Research and the Indian Council of Medical Research. The efforts made by the AIU in this direction have been appreciated. I would like to appeal to the members to host such training programmes in the coming years so that this very important activity can be strengthened.

Over the past years, the functions of the AIU have grown in number and depth. However, finance has become a constraint to these activities. The Association has already moved to its new office premises at Kotla Marg, New Delhi, but the building is yet not fully complete due to paucity of funds. I would, therefore, appeal to the Ministry of Human Resource Development and particularly to the Hon'ble Minister of State for Education, Government of India and to the UGC to help the AIU to overcome these financial difficulties. It is proposed to hold in India a conference of the Association of Commonwealth Universities in January 1991. I hope the Government of India would soon give clearance for hosting this conference.

Before I close my speech, I would like to express my sincere gratitude for the wholehearted support and co-operation I received from all my colleagues, members of the Standing Committee and Vice-Chancellors of various Universities during my tenure as President of the AIU. Their experienced advice in matters pertaining to the Association has been very valuable and a great source of strength to me. I am grateful to Professor G. Ram Reddy, past president of the Association, for his help. Professor Jagdish Narain, former Secretary, Professor S.K. Agrawala, present Secretary, other officers and staff of the AIU gave me full co-operation in my work. I would like to place on record my appreciation of their co-operation and the excellent work they are doing for fostering the objectives of the AIU. I am sure, they will extend the same co-operation to my successor. □

MAKING THE SYSTEM WORK
A Multidimensional Task

Rais Ahmed*

The task as defined by National Policy on Education/ Programme of Action

The National Policy on Education approved by the Parliament in 1986 has a special section entitled "Making the System Work". There is an obvious presumption that the System does not work efficiently or promptly. We in the universities have been aware of this for many years now, and there has often been a feeling that there is continual deterioration in the working of the system. Naturally, all the good ideas about educational reform, and all the expectations from higher education in relation to social, economic and cultural development of the country will come to nought if the system does not work properly. In fact, an errant system can bring down the quality of education of our young people and even their morale, thus posing a grave danger to the nation. It is this concern which is reflected in the National Policy on Education, and in the Programme of Action, which was also approved by Parliament in 1986.

2. We all know, and a reading of the Policy as well as the Programme of Action makes it clear, that Parliament was also aware of the fact that the working of the system suffers both due to internal reasons, i.e. reasons lying within institutional functioning, and due to external circumstances, i.e. reasons attributable to the outer system involving the Central and the State Governments, the University Grants Commission and other similar agencies, and socio-economic conditions. The Programme of Action says : "that the system of education is an integral part of the total socio-economic system and that transformation of the system of education will have to go side by side with critical changes in the rest of the system". Identifying the essential aspects of the task of improving the Working of the system, Programme of Action lays down under 6 (a) : "Certain norms of performance must be laid down for observance by the administration (Government, as well as managements of educational institutions), teachers, students and educational institutions." In 6 (d) it says "One of the malaise which has eaten into the educational system is unwarranted interference by political and administrative centres of power. While it is not possible to insulate the educational system from the socio-economic and socio-political forces, it will have to be ensured that the working of the system is not undermined by the political, bureaucratic and anti-social elements-within or outside the educational system."

3. Therefore, making the system work is at once a task of rectifying matters outside the universities and colleges, as well as inside. This is being stated in clear terms because sometimes the bureaucracy gives an impression that making the system work means only ensuring proper working of the institutions so that the teachers teach, the students study, and admissions as well as declaration of results is on time, etc. Quite often the teachers in the universities, who have a big role in the internal management of academic and administrative life, also have the false impression that the tightening of the system, which is absolutely necessary, means demanding greater discipline from the teachers or the students alone.

4. Making the system work must be sincerely taken as a comprehensive task and the understanding and goodwill of all components must be evoked and cultivated so that there is partnership in this endeavour. It is, therefore, obvious that apart from what the official agencies, like the ministeries or the government departments or even the University Grants Commission might do, there is a great role for non-official agencies to create the right atmosphere for changes in the working of the system. The Association of Indian Universities and bodies representing teachers of colleges and universities have a special responsibility to create such an atmosphere, and to bring about appreciation of the problems involved and the ways to tackle them.

5. What is commonly observed in connection with the role of the government is related to the appointment of and attitude towards the vice-chancellors, and towards allocation and release of funds for the universities.

[*Paper presented at the 63rd Annual Meeting of AIU held on December 5-7, 1988.*]

**Former Vice-Chairman, University Grants Commission.*

Autonomy of the University and the Position of the Vice-Chancellor

6. It is hoped that we hold the common view that the universities are designed to be autonomous institutions in the interest of social, economic and cultural development of the country. If conditions are right, the universities should be centres of dissemination of knowledge, of creation of knowledge, and of critical examination of all important issues concerning the life of the people. All these activities need to be carried on unhampered by narrow considerations of what the government of the time, or political parties, or any other groups of vested interest might wish the universities to do so. In this way alone can people with freedom of spirit and creative ability to serve the nation be nurtured. In this way alone can scholarly and objective studies be made which would provide a feed back to the nation and the government on the consequences and the impact of various plans and policies. This role of the universities has to be protected in national interest, and the most important agency to protect this role, apart from universities is government itself. Narrow minded and partisan considerations in dealing with the universities, or doing anything which would denigrate the social standing of the university, would be self defeating.

7. It is, therefore, necessary not only that people of a high level of competence, integrity and self-respect able to serve the university and the nation in the above mentioned perspective, should be appointed Vice-Chancellors, but also the Vice-Chancellors should be given the highest respect and social status. In view of the high position of this office, there may be temptation to oblige political or personal friends, and equally there may be those who pull strings and put pressures for their own appointment as Vice-Chancellors, but such people would hardly be able to lead the university or to stand up to it. In countries where the universities play an effective role in the life of their nations, Vice-Chancellors, by whatever designation they might be known, are able to communicate with the highest authority in the state directly. In our country, for atleast two decades after independence, the Vice-Chancellors of central universities were personally known to the Prime-Minister, and they could directly get in touch with him whenever this was necessary. Ministers of the government when they were in town, visited Vice-Chancellors in their office or home and did not expect the Vice-Chancellors to call on them. A person in a high office does not bring himself or herself down by showing respect to a seat of learning or a leader of the intellectual community. On the other hand, such gestures of deference, make the lesser and local officials to take the queue, and many problems of the university which are also ultimately the problems of the government evaporate in thin air. Unfortunately we have downgraded the Vice-Chancellors and, therefore, the universities, and their role in national life, and thereby we have increased our problems. Indeed, in some places we seem to have gone to the other extreme, there is the most lamentable tendency to impose government's will on the Vice-Chancellors, and in case of displeasure to dispense with their services without formalities. There are provisions, and there ought to be such provisions, that if a Vice-Chancellor has not functioned properly in any respect, there should be a formal enquiry, as a consequence of which he might resign or may even be prosecuted, if the errors or omission and commission are of such nature. But what we are dealing with here is that whims and fancies of government and their politica or other considerations. If the system has to work, the situation right at the top must be remedied speedily. It must be realised that not even a machine can be set right by banging it on the floor; the working of the universities cannot be improved by humiliating Vice-Chancellors, who represent the honour of the institutions. Staff and students are insulted by such actions and their respect for the entire socio-political system goes phomenting down.

Provision of Funds and other Matters of General Efficiency

8. In the matter of providing funds to the universities, essentially in the States, the position is again highly unsatisfactory. The universities sometimes do not have money to pay even salaries and they often do not have money for maintaining academic life, and even basic facilities at the minimum reasonable level. Dissatisfaction, discontent, frustration and agitations often arise from these situations, and they play a disruptive role in the discharging of expected function of the university. Often funds are not adequate at the time of allocation and whatever is allocated is not released in time to the universities. Norms will have to be laid down to rectify this situation. Perhaps the intervention of the State Councils of Higher Education could remedy this situation. It must be realised that a minimum level of funding is required even to fulfil the compulsions rightly laid down by the University Grants Commission for the maintenance of minimum standards. The Programme of Action speaks of providing the basic infrastructure and a certain minimum of facilities to all institutions. But we find

today that a number of universities, and certainly thousands of colleges, do not fulfil the minimum requirements, and it is most unfair to allow unsuspecting students to work their way to the degrees offered by such institutions. Government's responsibility in this respect is very clear.

9. If one goes around the country, one comes across numerous complaints about delays in decision making by the Central as well as State governments and the University Grants Commission. Vice-Chancellors are not appointed in time. Visitor's or Chancellor's nominees on Executive Council and Selection Committees are not appointed in time, there are complaints that some provisions of the University act or statute are violated, the chancellors/governments do not give their decisions promptly, the schemes of research and development hang fire for long time. The sluggishness of the offices under the government and the University Grants Commission has become proverbial. These things have to be remedied and where necessary new procedures evolved so that the system works efficiently from the top down.

10. The National Policy on Education says "Education needs to be managed in an atmosphere of utmost intellectual rigour, seriousnese of purpose and, at the same time, of freedom essential for innovation and creativity...the process of introducing discipline into the system will have to be started, here and now, in what exists",

Participatory Aspect of Making it Work

11. One of the important aspects of Making the System Work is contained in the basic principle that the new educational order has to be participatory and cooperative. The Programme of Action says at 6 (c) "The faith manifested by the nation in the teachers and students, as reflected in NPE, implies that they will be systematically consulted at various stages of planning and implementation of Making the System Work". We have not yet heard of any consultative machinery having been set up at the level of the ministries and departments of education or of the University Grants Commission and other similar bodies. The setting up of a consultative system in the universities has been initiated in certain universities, but this is a principle from which we cannot depart at any level. The formal management structures have their important role and they may not be diluted by involving in them narrow trade union or parochial interest, but consultative forums have to be set up at many levels within the universities, and in the external agencies. In the absence of such participatory forums it could easily be made out that the tuning up of the system is being ordered from above.

Teachers Conduct and Performance

12. Since the universities are run, and their life regulated predominantly by teachers, it is very important to improve the internal working of the system in partnership with teachers. There should be a serious, scholarly and persuasive attempt amongst the teachers and they should be motivated by a campaign to improve the professional and academic functioning of the entire community of teachers. Such a motivational campaign could also be very aptly undertaken by the Association of Indian Universities and by the organisation of teachers themselves, since official efforts have great limitations in this respect. There are complaints of teachers either delaying or inadequately performing examination work, often disregarding norms and rules and throwing the routine of university life out of gear. Teaching is often indifferent or negligent and a large number of teachers, particularly in colleges, are known to take private tuitions for amassing wealth. Tutorials and assignments, which are crucial for the educational process, do not receive the attention which is due. The attitude of teachers towards education, government and the college of the university is often overly critical, cynical or even hostile. They are often afraid of the tightening up of the system of the university, or keeping any sort of record of the performance of day to day academic duties. This whole situation has to be changed and trust and confidence restored among the teachers on the fair and non-punitive administration of the university or the college. At the same time, the authorities should have the guts to administer, because they have a duty to insist on the performance by the teachers of their specific duties and role.

13. If the running record of performance is maintained by the teacher and authenticated by another teacher who is at the supervisory level, such as the head of the department or principal, it should be used for decision-making at the time of considering promotion of the peacher to a higher post. The universities should not dilute their assessment of teachers under any kind of pressure. If they do so, the whole system would be demoralised. The merit promotion scheme, which is a good scheme in principle, has been so operated due to various circumstances, that the entire selection process has been discredited, and even teachers who have benefited feel that coveted positions of Readers and Professors have been devalued. So, policy and plann-

ing should be based on consultation with teachers, involving some of them in administration of the system is customary, but insisting on the carrying out of specific duties will have to be pursued. Any teacher inclined to do creative work must be given reasonable facilities for doing so and all encouragement must be given by way of providing work space and other facilities for teachers to continue to learn. What often irks teachers is lack of attention of the administration to grievances of individuals, and it has already been said elsewhere that grievance redressal mechanisms have to be created in all institutions, and their nature must be such that they evoke confidence and trust. One talks of a code of conduct for teachers and one fervently hopes that teachers themselves, as the most honoured members of the institutions, will come forward to propose ways and means of ensuring that no one shirks his or her basic responsibilities and every one work positively to enhance an atmosphere o. cooperation and justice in the educational system. No delay, however, should be tolerated in this respect, if teachers are unable or unwilling to propose a code of conduct, it should be evolved by the academic councils of the universities and circulated for further suggestions, and then adopted within a time frame.

Administration vis-a-vis Students

14. The improvement of student amenities, services and living conditions has been admitted to be a very important factor in the working of a system, and their absence often leads to student tempers running short and agitations easily germinating. One is here referring to the conditions of the hostels, of arrangements-of food, cafeterias, shopping centres, sports and recreation facilities, etc. The Programme of Action promises that glaring deficiencies in this regard will be made good without delay and an effective machinery created for removal of student's grievances. In many universities students petitions and applications on different subjects are handled in an easy going way, if not in an inefficient manner, and the functioning of the offices has to be regulated in this respect.

15. It goes without saying that most students are serious minded and they come to the institutions to study. Their parents have great expectations from what their wards can acquire from the institutions which they attend. However, a small number of students who are to begin with, backward in their studies or who have political motivation and are even planted in the universities or colleges, or those who are sometimes used by outside administration for collecting information about students movements are a source of constant trouble to the university administration. Because of the kind of backing they get from various quarters, they act tough and are loud mouthed. To keep this small fraction of students under control and not to allow them to disturb the functioning of the institution is the art of administration. It has been observed that a soft administration generally invites more trouble, and encourages even serious minded students to resort to agitational methods. The best way to improve the situation in this respect is to have an administration which takes quick decisions, does as much as is reasonably possible for helping the students and refuses to be coerced of any issues or questions which would adversely affect the standard of performance of the institution or to lower its prestige. If the administration is firm, and if it can stand up to external interference, discipline can be maintained. The Vice-Chancellor, as the chief executive of the university, has prime responsibility in this regard, and he or she can be firm only if he or she is not looking for any favours from the authorities for himself or herself.

16. In connection with student unions there are several kinds of views ranging from banning the unions to allowing full freedom to them. One view is that the law does not allow any student to be forced to join union, and therefore, the unions should be voluntary bodies, who should raise funds from voluntary contributions of students, and the university or college administration should not collect funds for them. A reasonable view has to be taken in a particular situation, and where student unions have existed already, it would be inviting trouble to try to abolish them. Two points, however, are of considerable significance and attention should be given to them. One is that the unions, in the interest of their own membership, should be made to function democratically, and their funds should be audited. The running of the unions by small coteries of determined students, and holding of general body meetings in such a way that the views of one group always prevail, is fairly common and this should be avoided. If there is to be a decision of the union, it must be democratically arrived at. The funds are often mis-used, as is liable to happen in many situations when there is no control over expenditure. The institutions should ensure democratic functioning, and proper use of funds. The second point is that as far as possible, the students should be put in a position to run their own facilities, such as arrangements for food, cafeterias, cooperative bookshops, sports, recreation, common rooms, etc. Student groups should be involved for the running of these facilities in a diversified manner so that no single group of stu-

dents gets hold of all the activities, and sports will be maneaged by students who are sportsmen, hostel food arrangements will be managed by students of a particular hostel, etc. Students should also be involved in a consultative capacity in the general administration of the hostels, in each department and faculty and at the level of academic and executive committees. Involvement in the management of the hostel should be of those students who reside in the hostel, consultation in each department should be with the students studying in that department, and so on. This vast consultative network will involve a large number of students of different pursuits and it will give importance to students who have accomplishment to their credit in sports, or in studies, etc. And so far as this happens, the potential of the union to engineer any kind of trouble is reduced.

Tightening of Internal Administration

17. In the internal management of the universities it is very important to rationalise and tighten a variety of processes. For example, in admissions inordinate delays are common since the institutions accept certain principles without regard to the time they will consume, and the trouble they will cause. In a city university, students apply for admission to different colleges by separate applications because each has an identity. For the students, it is like seeking admission to 50 or 60 institutions at once. The student has to find out the fate of his application in one college and run to the other to explore the possibilities, and then perhaps discover at the end that he has been admitted nowhere although he had sufficient marks for admission had he applied to a particular college. Information on admissions is not posted centrally although the university claims, and the teachers claim, that the institution is the one. In other circumstances, universities may have an admission test for which hundreds or thousands of students visit them, they go home while answerbooks are evaluated, they are called back to the university for interview if they have qualified. They go home again until the final tabulation leads to selection for admission. The plight of the students, and often their parents, can be imagined if a student goes through this process at two or three universities. It is time that every university introspected and made its admission processes fair as well as expeditious. Whatever change in rules, or use of technology is needed should be quickly taken up, because a prolonged admission process not only causes expenses and anxiety to students but takes away so many possible working days from the schedule of the university.

Holding of examination and compilation of results is another problem where remedies have to be found. Examinations take a long time because of the gaps which the students demand, and if the options are available to students for combining various kinds of courses, as they should be, the examination period comes longer. If students are allowed to improve their performance at any of the papers of previous years or semesters, then this facility also prolongs the examination. In other words, in the present arrangements, a good system becomes an impracticable system. Teachers or other evaluators often do not take enough care either in framing question papers or in evaluating them. They often do not stick to the schedule. This leads to wastage of precious time, and great harassment to students, particularly to those who want their results to apply to other places. Since the numerous other shortcomings of the examination system make it, at least, not a totally reliable system, the universities must urgently bring about basic changes in the pattern of examinations. Academic Councils should be immediately seized of this problem. This has been a major area of reforms which have been advocated for a long time, but the end result has not been very encouraging. Perhaps in 80% of the institutions we are still practicing the old system and suffering from the consequences. It is not uncommon to hear of exams of last year or year before being held this year and student telling members of selection boards which they face for jobs, that the apparent gaps in their academic careers are due to delayed examinations in such and such "famous" university.

18. The setting up of decentralised consultative committees and all grievance removing mechanisms have been mentioned before. There are detailed recommendations of various high powered committees in this respect and the universities would be well advised to consult with their own staff, urgently, for the purpose of designing which kind of consultative

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TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

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and grievance removing mechanism they would like to set up.

19. The Programme of Action and indeed the National Policy on Education speaks of "The minimum threshold for facilities to be provided for all educational institutions" and "Existing physical plant and facilities available in the institutions will be tidied up, repaired as may be necessary and re-furbished". It is the responsibility of the University Grants Commission to satisfy this need and procure fund for the purpose. It is equally the responsibility of the universities and the colleges to compile and scrutinise lists for drawing the minimum facilities to be added to their institutions. In order to obtain minimum facilities and the infrastructural requirements to function properly, the institutions should raise, if necessary, a joint hue and cry, so that this promise made in the Programme of Action is fulfilled. But this exercise of drawing up what are the minimum threshold facilities has to be undertaken with great seriousness so that it does not result in inflated demands which the country cannot fulfil, but that the essentials are not forgotten.

Performance Information and Audit

20. It is of the utmost importance that the institutions should know what is happening within them in every sphere of activity and that they make an assessment of their own performance. Several times in the past question of performance audit within the institutions has been raised but no sustained attention has been given to it. There is merit in a self assessment, but institutions would admit that if an objective assessment of their performance is made by a competent group which is not intended either to denigrate them or protect them from the surfacing of weaknesses, it would be still better. Perhaps, the Association of Indian Universities can develop a system of experts from one university periodically assessing another university in respect of certain identified activities. Universities in a city or in neighbourhood could also form a club for this purpose and help each other. It should be clear that the function of a performance audit is not to find fault with institutions or individuals but to correct the shortcomings, so as to improve the functioning of the institutions and thus improve its services to the nation. We give below a list of possible areas and the kinds of evaluation which may be made :

(a) **Efficiency in the use of funds** could be examined in terms of unspent balance under various heads or shortages under other heads. Power to divert reasonable amounts from one head to another could improve utilization of scarce money. The rate of movement of files on financial matters can be readily assessed from a sampling of the file work, for example, how quickly are contingency grants released on the demands of the departments, or how quickly are orders placed and bills paid, etc.;

(b) **Efficiency in the use of space and time** can be assessed by examining the utilization factor of classrooms, laboratories and such facilities as libraries or computers, etc. The intensity of use of the library or of the workshop can be assessed. The length of a working day, i.e. days on which classes were held can also be assessed from the attendance ragisters or other records kept by the departments or faculties. Promptness in installing new equipments or repair of old equipments can be measured. The number of lectures annually held versus the number of lectures scheduled in a year in different departments for different courses can be assessed. Time lost in departments due to minor or major problems and difficulties can also be measured because some departments lose more time than others, which would have a reflection on the departmental management.

(c) **In the academic field** the regularity of admission and publication of examination results, and the time taken over them can be measured. The regularity in the teaching of classes, laboratories, tutorials can be measured by keeping a proper record. Since this is a crucial area, it should be explored, whether the installation of modern technology devices could be tolerated/appreciated by the system, for example, there could be a signal on a board in somebody's room when a classroom is occupied by a teacher or a laboratory is engaged in work. In some countries a system of closed circuit television monitoring of teachers taking their classes has been developed—but of course, less expensive and less obtrusive systems are also visualisable. Information on new courses started and other initiatives taken for academic improvement could be covered. The intensity of demand for admission for various courses could be assessed from a comparison of the number of students with the number of applicants and quality, and, how this ratio has been changing over the years. Linkages with other institutions, casual or regular, could be taken note of. Any other innovation in teaching and research or award of distinctions and prizes could be noted.

(d) **On the administration side** the record could be examined to see how quickly the decisions of the various university bodies were implemented, and if there were delays what were the reasons; speed of movement of files in and out of various offices, or files of an administrative nature from the registrar's office or the treasurer's office, or the Vice-Chancellor's office could be examined. An assessment could be made of the problems of various kinds which are pending solution and whether the solution is awaited from the Central or the State Governments or the University Grants Commission or the Municipal Corporation, etc. Implementation of various suggestions and guidelines received from the University Grants Commission and/or from the State Council of Higher Education could be assessed; for example, how far participatory systems have been set up, how far departmental autonomy has been implemented, etc. The state of buildings, hostels, residences, roads, land and ground could be assessed. Planning and developmant proposals, strategies and action could be reviewed to see how far the system is involved in its own growth. One may even visualise a snap poll indicating the state of satisfaction among students, karamcharies, teachers and officials at various levels.

21. It is obvious that the responsibility for making the system work has to be squarely faced at all levels and, as the Policy says, one level should not relax because another level has failed to carry out its part of the responsibility. While the Association of Indian Universities should put the pressure that the system should be made to work at the highest level, the Vice-Chancellors in the universities should persuade their colleagues in the university to set up a system within the institutions in accordance with the needs and possibilities in each place.

Department of Civics and Politics
UNIVERSITY OF BOMBAY

Ph.D. FELLOWSHIPS IN INTERNATIONAL RELATIONS

The Department received a grant from the Ford Foundation in support of its international relations programme. Ph.D. fellowships are an important constituent of this effort to enhance research and teaching in the field. Three research fellowships on par with the UGC's Junior Fellowships will be given beginning from March, 1989. Preference will be given to recent M.A.'s (in or after 1985) with a consistently good academic record and high research potential. Minimum qualification required is an M.A. with high second class.

Selected candidates will receive help for typing the dissertation. Field trip within the country will also be possible in deserving cases. Continuation of the fellowship is subject to an annual review of research work done. Candidates called for interview will be paid second class train fare both ways.

Applications must be submitted in the prescribed form, which can be obtained free of charge from the Department of Civics and Politics, University of Bombay, Kalina Campus, Bombay-400 098. Application fees of Rs. 50/- in the form of a crossed demand draft in favour of "The Registrar, University of Bombay" must accompany the duly filled form. The application fees is non-refundable. Letters asking for the form should clearly be marked "Attn : Ford Foundation Fellowships". Last date for receiving the application is **31st January, 1989**.

B. Ramesh Babu
HEAD OF THE DEPT.

West Zone Youth Festival at Indore

The West Zone Inter University Youth Festival, last of the four Inter University Zonal Youth Festivals, concluded with traditional gaeity, at the Devi Ahilya Vishwavidyalaya (DAVV), Indore. The Youth Festival was sponsored by the AIU in collaboration with the Department of Youth Affairs & Sports, Government of India from November 20-23, 1988 in which over 550 university youth from 28 universities in the West Zone participated.

The Youth Festival commenced with an impressive cultural procession, in which youth marched in their colourful costumes with banners, posters, etc. The delegates assembled at the Ravindra Natya Graha where the Festival was formally inaugurated by Shri Abhay Chhajlani, the Managing Director of the local daily 'Nai Duniya'. Other important personalities present on this occasion were the renowned writer Shri Prabhakar Machwe and the Ex-Director of M.P. Council of Science and Technology, Dr. T.S. Murty.

The cultural bonanza exploded with the events of One-Act Plays, Classical Vocal Solo (Hindustani/Karnatic), and-on-the-spot painting.

In the Classical Vocal (Solo) Nanda Purchure of Bombay University and Miss Sushruti Mandal of Jiwaji University were adjudged the best while participants of DAVV, Indore, Amravati and SNDT were appreciated for their superb rendition of classical ragas. Shashi Kant Panchal and Ashok Patel of Gujarat University and Bhavnagar University stole the show in the category of on-the-spot painting which was held in Devilalikar Art Gallery providing a fine environment to the participants. In all 14 universities participated in this event.

Twenty three teams participated in One-Act Plays and this was divided into three sessions. The first session was held in the afternoon of the opening day when 8 plays were presented. Gujarat University presented a touching play 'Kamla' in Sanskrit language. Though the language used proved to be a hurdle in understanding the play amongst the audience, the excellent presentation of play could not go unnoticed.

Bombay University presented a Marathi Play 'Nishparna Vri Khsavara's covering tribal culture, problems and exploitation. The play was written by Prof. Ramesh Kubal who is working on tribal research. The Bhopal University presented "Inqulab Zinda Bad', covering the era before Indian Independence and developments thereafter.

The Bombay University and Bhopal University were adjudged the best in One-Act Plays. The other plays specifically presented by Jodhpur University, Amravati University and Rajasthan University, Jaipur were applauded by the audience for the qualities of lighting effect, stage craft and presentation.

Collage and Poster Making events were arranged at Devlaikar Kala Veethika. Sixteen teams participated in the event and the quality presented by the participating teams turned out to be of high order. S.D. Muley of Marathwada and Sanjaya Chad, Rajasthan Agricultural University, Bikaner were adjudged best in Collage competition. In the Poster Making events the majority of participants highlighted current events like dowry and adult education. Shashi Kant K. Panchol of Gujarat University and Ashok Patel of Bhavnagar University were declared the best two in this event.

In Classical Insturmental music, Supreet Deshpande of Bhopal University and Yeshwant Sharma of Jodhpur University were declared as the best in the percussion event.

Rajasthani Folk Dance by Rajasthan Vidyapith

In Non-Percussion it was once again Nikhil Bidwalkar who enthralled the audience on his santoor. Mohan Pandse of Bombay was the other second best.

Budding talents presented light Classical Vocal at the MGM Medical College. K. Suchitra Barve of SNDT, Bombay and Shri Madhav Bhagwat of Jiwaji University were declared as the best.

Classical Dances were presented by 13 universities at Kasturbagram Rural Institute. Performances of MS. Patil of Bhopal University, Km. Deepa of DAVV, Ku. Ujjawala Bhole of Nagpur University were well appreciated. But the performance of S. Rajendran of Bombay University and H. Gupta of Banasthali Vidyapeeth was declared as the best.

The major attraction of the third day of the Utsav was Western Music event which was held at the Holkar Science College where a large crowd was present and the big Yashwant Hall proved too small for audience. Rohit Manjrekar of DAVV fetched the first victory for the host university by winning the Western Music Vocal (Solo) when he presented number 'Lucky Lips' of Cliff Richards. Goa University's Della Fernandes was the other best in the event as she presented 'Give me more time'. The other notable presentations were from Bombay University 'Jam Your lady', Rajasthan Agril, University, Bikaner and SNDT.

In the second event i.e. Western Group Song, it was again Goa University sharing the honours of the day with the Bombay University. Bombay team sang 'Bridges with one is for Common people' while Goa team presented 'Lovely Lady and Straw Berry Red. SNDT, Rani Durgawati, Rajasthan Agri, teams were also applauded.

The Group Song (Indian) event which was held at MGM Medical College attracted a large audience in addition to local youth. The major attractions were 'Vidhvans Ki Kalpna Na Ho Kabhi' and 'Ambua Ki koyal bole Sawan Barse' by DAVV; 'Yeh duniya jan ley ke hum sub ek hein' and 'Oh Ladhsi Luya'—by Rajasthan Vidyapeeth, but the honours of the event were shared by SNDT & Banasthali Vidyapeeth who presented 'Shymo Re Barsat Ayai'—'Narbda Rang Bahri Hori Khelega...' and 'Ho Jao tayyar Sathi Ho Jao', The impact of the songs presented was clearly visible on the packed audience who clapped constantly with the rythym all the way.

In the Quiz contest 18 teams participated in the preliminary round where 80 questions were to be answered in one hour. Four teams, namely, HS. Gour, DAVV, Jodhpur and Goa Universities qualified for the final round.

In the final round the pattern was audio-visual general knowledge and oral questions. Goa University and Dr. H.S. Gour University were declared as the best two teams of the event.

Folk Dance presented by SNDT Contingent

Skits and Mime, Clay Modelling and Cartooning were the other events of the day. Skits and Mime events held at Ravindra Natya Grah in the morning and evening sessions respectively were enjoyed by a packed audience. In the Skits Goa University and M.S. University of Baroda emerged as winners. The theme of Goa University was 'Hartal' while M.S. University of Baroda presented an experiment on making of a film. Mungeri Lal role was seen in the Rani Durgawati University, Jabalpur in 'Rahayas Mai Aag', which was appreciated by the audience.

In the Mime, it was an all-Bombay affair. Bombay and SNDT, Bombay were adjudged best, those presented by H.S. Gour, Rani Durgawati & Amravati Universities were appreciated by the audience.

In the evening special feasts were arranged at GDC College; Holkar Hostel and Bapna Hostel where participants were seen enjoying the delicious food served to them. The team-work displayed by the students of the local colleges was one of the best ever seen.

The last day of the Festival commenced with the events of Folk/Tribal Dance at the packed Rabindra Natya Grah for which 18 enteries were received. The event started with 'Terrah Tali' Dance of Rajasthan University. The packed auditorium thoroughly enjoyed the various dances presented. The Bhavnagar University presented a very impressive 'Dandia Rass' while Jodhpur University's 'Terah Tahil' Folk Dance won them applause. The centre of attraction was Kum. Geetanjali, who danced with seven matkas atop her head. Honours of the day were shared by Dr. H.S. Gour University team which performed the popular dance 'Govher' of the Bastar Tribals and the University of Rajasthan, Jaipur. The other event, which was non-competitive, was a Group Discussion on 'Nehru—Architect of Modern India'. Jiwaji University and Devi Ahilya students were the best amongst the participants.

Grand finale of the Meet came with the valedictory function in which Dr. Shiv Mangal Singh Suman was the Chief Guest and Dr. S,K. Chauhan, Vice-Chancellor, Vikram University presided over. Dr. Suman pointed out that mere lectures and preachings cannot bring about unity and integrity. It can be better achieved through the medium of literary and cultural activities.

Dr. Suman gave away the prizes to the participants. A participation certificate and a silver medal were presented to each participant while the contingent leaders were presented mementoes. Eventwise trophies were also presented to the winners. The Overall Championship was claimed by Bombay University and the runners up trophy by Goa University, Goa. The leaders of the students councils presented three trophies, namely, to Bombay, SNDT and Goa Universities.

West Zone Inter-University Youth Festival—1988

RESULTS

S. No.	Events	Decleared two best
1.	Music	
	(a) Classical Vocal Solo (Hindustani or Karnatic)	(1) Ku. Nanda Purchure Bombay Vishwavidyalaya, Bombay. (2) Ku. Sushruti Mandal, Jiwaji University, Gwalior
	(b) Classical Instrumental Solo (Percussion)	(1) Shri Supreat Deshpan, Bhopal University, Bhopal (2) Shri Yeshwant Sharma, Jodhpur Vishwavidyalaya, Jodhpur
	(c) Classical Instrumental Solo (Non-Percussion)	(1) Shri Nikhil Bidwalkar, Jodhpur University, Jodhpur (2) Shri Mohan Pandse, Bombay University, Bombay
	(d) Light Vocal (Indian)	(1) Ku. Suchitra Barve, SNDT Womens' University, Bombay. (2) Shri Madhv Bhagwat, Jiwaji University, Gwalior.

1	2	3
(e)	Western Vocal (Solo)	(1) Ku. Daila Fernandes, Goa University, Goa.
		(2) Shri Amulya Rohit Mangrekar, Devi Ahilya Vishwavidyalaya, Indore.
(f)	Group Song (Indian)	(1) Banasthali Vidyapeeth, Rajasthan 1. Ku. Ranjna Singh 2. Ku. Jyoti Shastri 3. Ku. Ganga Kalawant 4. Ku. Sumeera Mathur 5. Ku. Nirmla Tomar 6. Ku. Ina Shivpuri
		(2) SNDT. Womens' University, Bombay. 1. Ku. Vandana Katti 2. Ku. Varsha Limaye 3. Ku. Vrinda Gadgil 4. Ku. Gautami Vyas 5. Ku. Suchitra Bame 6. Ku. Harsha Limbusiya
(g)	Group Song (Western)	(1) Bombay University, Bombay 1. Shri Mahesh Tambane 2. Shri Sairam S. Iyer 3. Shri V. Ananthakrishnan 4. Ku. Sunita Dias 5. Ku. Sharmila Dias 6. Ku. Jayshree Maeishwaran
		(2) Goa University, Goa 1. Sandra D'Souza 2. Connie Theresa Farnandes 3. Fernanda Matos Sequeira 4. Vanessa Lorna Agnes Fernandes 5. Trevor Vaz Barretto 6. Deepak Das Neves Pereira
2. Dance		
(a)	Folk/Tribal Dance	(1) Dr. Hari Singh Gaur Vishwavidyalaya, Sagar 1. Shri Ramnaresh Tiwari 2. Shri Neeraj Jain 3. Shri Sanjay Jadiya 4. Shri M.S. Qureshi 5. Shri Akhilesh Pathak 6. Ku. Ruchi Sharma 7. Ku. Paramjeet Kour Jaggi 8. Ku. Upma Dubey 9. Ku. Aruna Deolia 10. Ku. Manju Jain
		(2) University of Rajasthan, Jaipur 1. Ku. Mangu Bhargava 2. Ku. Archana Nag 3. Ku. Rajnandini Chhabra 4. Ku. Anju Mathur 5. Ku. Anuradha Saxena 6. Ku. Bhanu Mathur 7. Ku. Yojana Sharma 8. Neelu Kulshreshtha 9. Ku. Kanika Pandey 10. Jaivardhan Bhatnagar

1	2	3
	(b) Classical Dance	(1) Shri Rajandran S. Bombay University, Bombay (2) Honey Gupta, Banasthali Vidyapith, Rajasthan
3.	**Quiz**	(1) Goa University, Goa 1. Mihir S. Kakodkar 2. Glessor Roballo 3. Naresh Naik (2) Dr. Harisingh Gour Vishwavidyalaya, Sagar 1. Shri Aniruddha Vaishnava 2. Shri Shambnes Singh Raghuvanshi 3. Shri Brijesh Tripathi
4.	**Theatre**	
	(a) One Act Play	(1) Bombay University, Bombay 1. Shri Vivek J. Naik 2. Shri Prakash Limaye 3. Shri Jagannath Patil 4. Shri Yogendra G. Mhatre 5. Shri Ashish D. Bhide 6. Shri Arvind V. Chavan 7. Ku. Kanchan Rane 8. Ku. Ulka R. Patil 9. Ku. Chitre N. Raut (2) Bhopal University, Bhopal 1. Shri Amitabh Anuragi 2. Shri Ashish Shrivastava 3. Shri Morris Lazarus 4. Shri Sanjeev Bhave 5. Shri Sachindra Kumar Shrivastava 6. Shri Sushil Kumar Singh 7. Shri Pankaj Jain 8. Shri Mumtaz Khan
	(b) Skits	(1) Goa University, Goa 1. Chitra K. Shirwaikar 2. Shilpa Panvalkar 3. Abhijit Dalvi 4. Domnic D'Cesta 5. Prasad Lolayenker 6. Rajesh Nadkarni (2) M.S. University of Baroda, Baroda. 1. Darshana A. Patel 2. Kalpesh P. Bhatt 3. Anil I. Rao 4. Madan R. Revdandekar
	(c) Mime	(1) Bombay University, Bombay 1. Shri Vivek J. Naik 2. Shri Prakash Limaye 3. Shri Jagannath Patil 4. Shri Ashish D. Bhide 5. Shri Arvind V. Chavan 6. Ku. Ulka R. Patil (2) SNDT Womens' University, Bombay 1. Ku. Gauri Deshpande 2. Ku. Sonal Phadke 3. Ku. Rupali Bidwai 4. Ku. Preeti Joshi 5. Yashoraj Zala 6. Yashoraj Ishrat Mohan

1	2	3
5. **Fine Arts**		
	(a) On the Spot Painting	(1) Panchal Shasikant Kantilal, Gujarat University, Ahmedabad
		(2) Patel Ashok Govindbhai, Bhavnagar University, Bhavnagar.
	(b) Collage	(1) Shri Muley S.D., Marathwada University, Aurangabad
		(2) Shri Sanjaya Chad, Rajasthan Agricultural University, Bikaner
	(c) Poster Making	(1) Shri Shashikant K. Panchal, Gujarat University, Ahmedabad
		(2) Shri Ashok Patal, Bhavnagar Untversity, Bhavnagar.
	(d) Clay Modelling	(1) Ku. Manisha Dighe Devi Ahilya Vishwavidyalaya, Indore.
		(2) Shri Jagdish Kumawat, Sukhadia Vishwavidyalaya, Udaipur
	(e) Cartooning	(1) Shri Ashok Kumar S. Darokar Nagpur University, Nagpur
		(2) Shri Sudhir Dhokal, Amrawati University, Amrawati
Music		
	Best Performance	: Bombay University, Bombay
	Second Best Performance	: SNDT Women's University, Bombay
Dance		
	Best Performance	: Dr. H.S. Gour University, Sagar
	Second Best Performance	: Bombay University, Bombay
Literary Events		
	Best Performance	: Goa University, Goa
	Second Best Performance	: Dr. H.S. Gour University, Sagar
Theatre		
	Best Performance	: Bombay University, Bombay
	Second Best Performance	: Goa University, Goa
Fine Arts		
	Best Performance	: Amravati University
	Runners Up	: Goa University, Goa
	Overall Champion	: Bombay University, Bombay

AIU Annual Meeting

(Continued from page 1)

The need for simplifying the system of Migration Certificate was felt and the universities were requested to streamline the procedures so that students are not put to any difficulty.

The mobility of scholars from university to research institutes and vice-versa was considered and it was suggested that steps be taken to facilitate this task.

It was strongly felt that UGC should have its regional centres in the country and should provide adequate financial assistance to State Universities as Education has become a concurrent subject.

It was decided to recommend to establish parity in the pay scales of Central and State University Registrars, Deputy Registrars and Assistant Registrars. It was also felt that the universities should have financial autonomy and it was not necessary to restrict their financial powers already enjoyed by them by Central Govt.

It was unanimously decided to recommend to the members for establishing University Book Shops on Co-operative basis on their campuses.

Prof. N.M. Swani, Director, IIT, New Delhi was elected the next President and Dr. Sukh Dev Singh, Vice-Chancellor, Punjab Agricultural University, Ludhiana was designated as the Vice-President.

The invitation of the University of Kashmir, Srinagar to host the 64th Annual Meeting of the Association in October, 1989 was accepted.

The meeting concluded with a vote of thanks to Prof. P.V. Salvi, President, AIU and Prof. R P. Rastogi, Vice-Chancellor of host university. □

Workshop on Accreditation and Assessment Council

A two-day workshop on the Accreditation and Assessment Council was recently held at the Andhra University, Visakhapatnam. Inaugurated by Prof. K.V. Ramana, Vice-Chancellor, the workshop was attended by over 50 delegates from six universities in the State. Dr. V. Natarajan, Director (Research), AIU, delivered the keynote address while Prof. C. Veeraiah, Dean of Academic Affairs and Director of the workshop presided over the inaugural function.

During detailed deliberations, the various aspects of the concept paper on Accreditation & Assessment Council were discussed and the following recommendations emerged :

(1) Since the academic autonomy alone can ensure effective functioning of the institutes of higher learning, because of the inbuilt provision of effective participation of all the concerned faculty of these institutions, the number of autonomous institutions should be increased gradually.

(2) To assess and evaluate these autonomous institutions periodically, for establishing their accreditation and thereby helping them to improve in phases, an accreditation and assessment council (AAC) is necessary.

(3) The Workshop is of the view that these AACs can be established at three levels i.e., University level, State level and National level; each one fulfilling its distinct role at the same time, and coordinating its functions and facilities with those of the others.

(4) For effective assessment and evaluation of the institutions by these Accreditation and Assessment Councils, the institutes must be informed of the modality in which they will be assessed both qualitatively and quantitatively. The concept paper gave only the qualitative aspects in this regard. The workshop discussed at length some of the qualitative aspects of requirements of the institutions, to be satisfied for obtaining accreditation, and recommended that the U.G.C. should constitute committees at different levels, to go into various aspects in this regard, and give their reports consisting of the details of these requirements of these institutes considering the features like rural-urban, backward, disadvantaged groups and so on.

UGC-NIEPA Collaborate on College Computers

Under a programme launched by the University Grants Commission mini computers are being provided to the universities and Microcomputers, the PC/XTs are being provided to the colleges and colleges of education. In this scheme it has been planned to include all the 48 academic staff colleges, 80 old autonomous colleges and a host of other institutions including those in the rural areas. It is estimated that by 1990 about 400 colleges will receive computer facilities

The primary objectives of providing computer facilities in the colleges are to provide computer orientation and education to students, improvement of management efficiency, and providing support to research by college teachers.

In a recent survey conducted by NIEPA on the computer facilities, utilisation and problems it has been revealed that computers are being utilised towards achievement of all these three objectives, but with differential skills. One of the major problems that the colleges are facing is the absence of trained computer professionals in the colleges. The computer centres are usually run by the existing teachers who either had some occasional exposure to computer, or are highly motivated (few) who picked up a few things in computers. The shortage of software and proper programme is the other problem.

In order to optimise the utilisation of computers in the colleges, the UGC has planned, in collaboration with NIEPA, to conduct a series of programmes to orient the Principals of the colleges that have recieved computer facilities. The orientation programme is visualised to have input on recent developments in computers, introduction to computer and its applications towards education, instruction, management and research support. It will also provide practical exposure to the principals on the computers. The first programme in the series was held from 21st November in NIEPA.

Management Development for Women Administrators

The S.N.D.T. Women's University organised the second international workshop for women administrators from Commonwealth Countries in collaboration with the Association of Commonwealth Universities, London and the CIDA from October 22 to November 4 1988. Three were 25 participants and 7 participant-observers from Sri Lanka, Malaysia, Bangla Desh, Tanzania, Swaziland, Papua New Guinea, Jamaica and India.

The workshop was inaugurated by Shri Kamal Kishore Kadam, Honourable Minister for Education, Government of Maharashtra. Satya Bhushan, Director, National Institute for Educational Planning and Administration, New Delhi delivered the keynote address while Dr. Rajammal P. Devdas, Vice-Chancellor, Avinashalingam Institute for Home Science and Higher Education for Women, Coimbatore, delivered the valedictory address.

The objectives of the workshop were : (a) To enable participants to appreciate and develop their own skills in some modern management techniques; (b) To further their understanding of the internal and external environment of their institution and to help the organisation to respond effectively to change in environment ; (c) To prepare participants to be facilitators of change for the effective administration of higher education; (d) To develop participants' skill in working together as a team and to help others become more effective administrators/academic managers; (e) To help participants develop networks (within and between Universities) which will be mutually supportive in the development of effective administration of universities.

The content to support these objectives fell into four related areas : (1) Situational diagnosis within a personal and professional context, (2) The environment of higher education, (3) The facilitation of change, and (4) The creation of support networks.

Prof. Puran Singh Award for Sciences

To commemorate the birth anniversary of Prof. Puran Singh, noted Punjabi Literateur, the Memorial committee constituted for the purpose has invited nominations from Indian scientists for Prof. Puran Singh Award for Science (Rs. 5,000/-) for outstanding research, fundamental or applied, in the field of the Chemistry of Minor Forest Products (i.e., essential oils, tannins, oils and fats, gums. starches, waxes, medicinal and aromatic chemicals etc., isolated from plants of forest origin) leading to their utilisation. Only results of researchers/contributions made during the five years preceding the year of the award shall be considered for the award.

Nominations can be made amongst others by Vice-Chancellors of Universities, Directors of Research Institutes, IITs, IISc, Presidents of Scientific Societies and academics, and heads of the principal scientific establishments in the country such as CSIR, BARC, ICAR, ICFRE, etc.

Nominations for the award should be supported by six copies of :

(a) state of work, achievement accomplished or performed by the nominated scientists;

(b) reasoned justification for the nomination;

(c) reprints of publication or other supporting data.

Nominations received will be examined by the committee of experts appointed by Puran Singh Memorial Committee, and the decision of the committee of experts will be final.

The last date for receiving the nominations for the award is 31st December, 1988. Proposals should be sent in a sealed cover marked "Confidential" to Major G.S. Ahluwalia, Secretary General. Prof. Puran Singh Memorial Committee, C-517, Defence Colony, New Delhi-110024.

The award will be given to the selected scientist on the day of the celebration of Prof. Puran Singh's birthday. He will also deliver on that occasion a popular lecture in the field of his specialisation to invited audience.

SAARC Chairs, Fellowships & Scholarships

At a recent meeting on the SAARC Chairs/Fellowships/Scholarships, inaugurated by the Chairman of the University Grants Commission, Prof. Yashpal and chaired by Prof. S.K. Khanna, Secretary, University Grants Commission, it was agreed that it would be desirable to have uniform norms and procedures with regard to action taken so far by the member countries for the operation of the scheme. It was also agreed that an outstanding scholar with the established reputation who has made significant contribution in his field of specialisation should be offered Chair in the member countries. The fellowships should be offered to experienced scholars with published work of high quality while the scholarships should be awarded to scholars with a first class/high second class Bachelor's/Master's degree intending to pursue higher studies leading to Master's/Ph.D. degree.

While the Chair should be for a period of two years extendable by one year, the fellowship should be for a period of one year. The scholarships should be for normal duration of the course.

The Jawaharlal Nehru University has been identified as a focal point for environment for SAARC Fellowships.

National Trekking Programme 1988-89

Delhi State Branch of the Youth Hostels Association of India will organise, in collaboration with the Goa State Branch, a National Trekking Programme 1988-89 in the Westren Ghat Areas of Goa from 16th to 31st December, 1988. The objective of the programme is to inculcate in the youth:

- —a deep sense of love for adventure;
- —to offer them well organised and properly supervised new trekking route and a healthy outdoor recreational activity;
- —to initiate them into the art and technique of camping, hiking, trekking and aquatic entertainment; and
- —to promote national integration by bringing them together from various parts of the country.

The Trek will take the participants from the coastal city of Panaji to the hilly tracts and pass through the scenic spots of dreamy Colva Beach, Dudhsagar Falls and Mahavir Wild Life Sanctuary. The programme is open to all educational institutions as also to individuals. In addition to the participation fee of Rs. 475/- per participant which includes board and lodging, supervision, equipment, etc. the participants will have to bear the travel expenses to and from the base camp at Panaji.

A group shall normally comprise 30 to 40 participants. The first group will report at base camp on 16th December, 1988. Participants can join on any date thereafter till 31st December, 1988.

Further information can be had from:

Programme Director
National Trekking
Programme, Goa
Delhi State Branch
Youth Hostels Association
of India
5, Nyaya Marg
Chanakyapuri
New Delhi-110021

International Workshop on Women & Development

The M.S. University of Baroda and the Univeasity of Illinois at Urbana, Champaign have undertaken a three year collaborative project primarily to examine research methedologies for conducting household research focusing on women in developing societies like India. As a part of this project an international workshop entitled "Women and Development : A critical appraisal of household level research methodologies" will be held at the M.S. University of Baroda from June 25th to July 4th 1989.

The workshop is expected to have representation from various countries especially of the Asian region and about 70 people will be participating at the National level, from various institutions who are actively involved in household level research. As an outcome of this workshop, alternate research methodologies would be evolved and new research proposals would be developed for coducting household level research.

Further details can be had from Prof. (Mrs.) Amita Verma, Project Directo, WID Project, Dept. of Human Development & Family Studies, Faculty of Home Science, M.S. University of Baroda, Baroda-390 002.

Membrane Sciene Centre at BHU

A centre on membrane science will be set up in the Banaras Hindu University for producing artificial membranes and to coordinate research activities in this field.

Professor R.P. Rastogi, Vice-Chancellor of the University, held discussions with the scientists and physicians who attended the two-day national workshop on "Membrane Science Engineering and Biomedical Application" held at Varanasi recently.

Dr. K.K. Tewary, member of the organising committee of the workshop, said production of artificial membrane in the country would strengthen the existing medical facilities in the treatment of kindney liver and heart diseases.

Lucknow Varsity Computer Centre

Professor Shitla Prasad Nagendra, Vice-Chancellor, Lucknow University, inaugurated the University Computer Centre on 14 November 1988 at an impressive ceremony organised jointly by the Lucknow University Cultural Centre and the Faculty of Science to mark the beginning of the Nehru birth-centenary year. In an inspiring address Professor Nagendra extrolled Nehru's scientific vision and its humanistic ideal. Professor TP Pandeya, In-charge of the Computer Centre explained the use that can be made of the Computer facility, its technical range and scope. The vote of thanks was proposed by Professor CP Sharma, Secretary, Planning & Development, Lucknow University.

ASC Orientation Programmes

The second Orientation Programme for University and College teachers organised by the Lucknow University Academic Staff College (ASC) started on November 14 with a batch of 28 trainees drawn from six Universities of Uttar Pradesh. The resource persons for the programme have been drawn from amongst the well-known scholars of the country including some from Lucknow University. Indian Institute of Management, Lucknow has been collaborating with the ASC in developing suitable course-modules for the orientation programmes and there is tremendous enthusiasm among the teachers participating in the programme. The popularity of the course can be judged by the fact that 256 teachers from outside U.P. have sought admission to the Orientation Programmes being conducted by the ASC, and teachers from several U.P. Universities outside the catchment area of the College are eager to join the training programme at Lucknow University.

Academic Link Interchange Scheme

UGC has identified Anna University in the area of "Biotechnology" under the Academic Link Intercharge Scheme. Anna University would work as a focal point for this programme with the associated institutions viz. (a) Delhi University, New Delhi and (b) Bharathidasan University, Tiruchi.

UGC has also identified Anna University in the area of Energy Conservation under the Academic Link Interchange Scheme. Anna University would work as a focal point for this proramme with the associated institution viz. Bombay University.

Special Assistance to Anna University

UGC has sanctioned a sum of Rs. 50.00 lakhs spreading over a period of 5 years for strengthening of the Teaching and Research activities of the Department of Electrical, Electronics and Communication Engineering under the UGC programme of 'Special Assistance' to selected University departments.

News from Agril. Varsities

Remote Sensing in Rural Development

A three-day national symposium on Remote Sensing in Rural Development was recently organised by the Indian Society of Remote Sensing and Haryana Agricultural University at Hisar. Inaugurating the symposium Dr. Har Swarup Singh, Vice-Chancellor, Haryana Agricultural University said that in the last 20 years India had achieved a lot of progress in the field of remote sensing. He stressed the location specific research work and said that we should not ape the west. He asked the scientists that efforts should be made for application of the new technology in all possible ways so that India may not lag behind the developed countries.

In his presidential address, Dr. Baldev Sahai, President of the Indian Society of Remote Sensing said that the socio-economic data and the conventional and remotely sensed data on physical resources needed to be integrated. He said, "In the fast changing world the setting up of Regional Remote Service Centres and Remote Application Centres in many states and universities will be quite useful in operationalising remote sensing technology in carrying out rural development programmes in a better way".

Giving a resume of the work done in remote sensing in the country, he said that this technique has been very useful for wasteland mapping, ground water prospects mapping, desert monitoring, crop production forecasting, flood cropping, inland and marine fisheries etc. Referring to the role of remote sensing to droughts in the country, he said, "Seventy nine per cent area of the country is prone to droughts which occur quite frequently in the arid zone comprising Rajasthan, a part of Haryana and Gujarat and less frequently in other states. With the rural population already groaning under poverty, such occurrence of droughts adds to the misery. Now, with the help of remote sensing, thematic maps, comprising landuse/cover, surface waterbodies, ground water prospects, lineaments, soils, watershed, prioritisation, land capabilities, and sites for artificial recharge of ground water maps can be prepared."

Dr. P.R. Pisharoti, Professor Emeritus, Physical Research Laboratory, Ahmedabad delivered the keynote address. In his address, he said, "We should develop innovative methods of data processing and data interpretation which are good enough for being copied or adapted by our friends in the West and North. In the field of Remote Sensing the lag is small. The needs of our country are different from those of the developed countries". He further said that in India more than 300 senior scientists were working on remote sensing techniques. The octogenarian scientist, who is known to be the father of remote sensing in India, lauded the work being done at HAU in remote sensing techniques for mapping wastelands and soils of the region.

About 200 scientists from all over the country attended the 3-day symposium at which about 60 papers on various aspects of remote sensing were presented.

News from Abroad

Dr. Maraj to Head Commonwealth of Learning

A former Vice-Chancellor and senior Commonwealth official Dr. James Maraj has been named as the first president of the Commonwealth of Learning, the international distance learning institution based in Vancouver.

Dr James Maraj, who is now head of the prime minister's office and secretary for foreign affairs in Fiji, will take office in January. His appointment was announced at the inauguration of the institution in Vancouver on 14 November 1988.

Lord Briggs, provost of Worcester College, Oxford, and author of the report which laid the ground for the new institution, is to be the first chairman of a board of governors which will include nine representatives of donor governments and five nominees of Sir Shridath Ramphal, the Commonwealth Secretary General, who will also be a member himself.

Dr Maraj will be the organization's chief executive and senior academic.

He was responsible for education as Commonwealth assistant secretary general in the mid-1970s and then spent seven years as Vice-Chancellor of the University of the South Pacific.

Although born in Trinidad, he was Fiji's High Commissioner to several Commonwealth countries before taking over the prime minister's office in 1984. A graduate of Birmingham University, Dr. Maraj has taught and lectured in the West Indies, where he was head of the university's institute of education.

The Commonwealth of Learning will begin its programme of work early in the new year.

It will have an income of £15 million for its first five years, the period for which British Columbia has made available the headquarters offices in central Vancouver.

The International Pierre de Coubertin Fair-Play Trophies

The UNESCO Director-General recently presented the 1987 International Pierre de Coubertin Fair-Play Trophies to the Indian tennis player Vijay Amritraj and the American basketball coach Cleveland Stroud at a ceremony organised in Paris. The ceremony was attended by the French Secretary of State for Youth and Sports, Mr. Roger Bambuck, and the President of the International Committee for Fair-Play, Mr. Jean Borotra.

Speaking on the occasion, Mr. Borotra said that Vijay Amritraj and Cleveland Stroud had been selected for their exemplary spirit of fair-play. "Throughout his 15-year career, Mr. Amritraj has always shown this spirit, highlighted during his participation in the final of the 1987 Davis Cup in Sweden where, as captain of the Indian team, he gave the best possible image of his sport by his speech and his general behaviour. Mr. Stroud, after having won the scholastic championships for his state, learned that one of his team's players who had participated in the match for 45 seconds was not qualified, and returned the trophy to the sports association of the state," added Mr. Borotra.

Diplomas of merit were awarded to 11 other athletes from different countries for their general attitude of fair-play or their spirit of fair-play, and to two Polish journalists for activities in the promotion of fair-play.

Mr. Roger Bambuck, after congratulating the award winners, highlighted the dangers of drugs and violence in modern sport. He stressed that those athletes who resorted to drugs risked the ruin of their careers and social isolation. "It is only through respect of the rules that one can respect one's adversary," he said.

In his address the Director-General also spoke of the feeling of "malaise, not to say shame" brought on by behaviour and practices threatening the values of sport, and help up the trophy winners as shining examples for all. "They are the incarnation of discipline, of uprightness and of the handsome gesture," he said. "They can be proud of their behaviour and their actions that have been inspired by their sporting spirit." The International Pierre de Coubertin Fair-Play Trophies were established in 1964 to bring home to the public in general and young people in particular the moral significance of exemplary sporting behaviour. They are awarded every year by the International Fair-Play Committee in close collaboration with Unesco.

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

HUMANITIES

Philosophy

1. Bhatnagar, Swadesh Kumar. *The philosophy of Dr. B.L. Atreya : A critical evaluation.* Rohilkhand. Dr. I.C. Sharma, K.G.K. College, Moradabad.

2. George, N.V. *Doctrine of incarnation in Vaishnavism and Christianity : A critical and comparative study.* Gauhati. Prof. M.K. Kutty, Department of Philosophy, Gauhati University, Guwahati.

3. Zakir Ali. *Hindu aur Muslim nitishastra ka tulnatmak adhyayan.* Rohilkhand. Dr. I.C. Sharma, K.G.K. College, Moradabad.

Fine Arts

1. Mawari, Mohan Singh. *Kumaun kee itihasik prishthbhoomi mein lokabhiroopon ka sanskritik anusheelan.* Indira Kala.

Music

1. Kalra, Kanta. *Rajasthani lok-sangeet mein shastriya sangeet tattwon ka adhyayan evam vivechan.* Rohilkhand. Dr. Sudha Rani Sharma, S R.S.G. Mahavidyalaya, Bareilly.

Language & Literature

English

1. Dash, Ramachandra. *Leavis' concept of the cultivated minority : A study of its nature and historical roots.* CIEFL. Prof. S.V. Pradhan, Department of English Literature, Central Institute of English and Foreign Languages, Hyderabad.

2. Harris, V.C. *Emily Dickinson and Sylvia Plath : A comparative study in poetic sensibility.* Kerala. Dr. K. Ayyappa Paniker, Prof. and Head, Institute of English, University of Kerala, Trivandrum.

3. Kiran Bala. *William Faulkner as a novelist : A critical study.* Rohilkhand. Dr. R.A. Misra, Bareilly College, Bareilly.

4. Misra, Chittaranjan. *The pattern of synthesis : A study of Harold Pinter's plays.* Sambalpur. Dr. M.S. Pati, Prof., Department of English, Sambalpur University, Burla.

5. Patel, Kunjaban. *Reporting in Oriya and English : A study in contrastive discourse analysis.* Sambalpur. Prof. H. Panda, Department of English, Sambalpur University, Burla.

6. Sambare, Manik. *Vision and design in the novels of Ernest Hemingway.* Devi Ahilya. Prof. R.N. Sharma, 57, Rajmahal Extension, Indore.

7. Singh, Ashok Kumar. *The quest for truth in the novels of Raja Rao.* Magadh.

8. Surendran, K.V. *Case assignment in English and Malayalam.* CIEFL. Prof. K S. Yadurajan, Department of Extension Services, Central Institute of English and Foreign Languages, Hyderabad.

Russian

1. Akella, Ram Das. *Phonological systems of Russian and Telugu : A correlative study.* CIEFL. Prof. J.P. Dimri, Department of Russian, Central Institute of English and Foreign Languages, Hyderabad.

Sanskrit

1. Bishnoi, Rita. *Pandav Puran : Ek sameekshatmak adhyayan.* Rohilkhand. Dr. R.C. Jain, Vardhman College, Bijnor.

2. Goyal, Daisy. *Mahakavi Kaviraj Pandit virachit Raghav-pandveeyam mahakavya ka samalochanatmak adhyayan* Rohilkhand. Dr. Ramjit Mishra, Bareilly College, Bareilly.

3. Jain, Vandana. *Sanskrit-kavya tatha katha-sahitya mein atiprakrit tattwa.* Rohilkhand. Dr. G.S. Gupta, Vardhman College, Bijnor.

4. Mishra, Janardhan Prasad. *Vakrokti-Jeevitam mein vakrokti ke vibhavana.* Patel. Dr. (Mrs.) C.P. Shukla, Prof. and Head, Department of Sanskrit, Sardar Patel University, Vallabh Vidyanagar.

5. Mishra, Nathu Lal. *Ramayanmashritya falit jyotishtattwa-namadhyayanam.* Ravishankar. Dr. R.N. Sharma, Principal, Govt. DSV Sanskrit College, Raipur.

6. Parashari, Savitri Devi. *Shatpath Brahman ke pratik : Ek vivechanatmak adhyayan.* Rohilkhand. Dr. K.K. Shukla, Bareilly College, Bareilly.

7. Sharma, Purshottam Dutt. *Swatantrayottar Sanskrit charitkavyon ka sahityik adhyayan, 1948-1983.* Panjab.

8. Shashi Rekha, P. *Ancient Indian administration with special reference to Arthasastra, Manu and Yajhavalkya.* Osmania.

9. Yash Pal Singh. *Maintenance of Aucitya in Kalidasa's works.* Panjab.

Pali

1. Khandekar, Balchandra Nathuji. *Suttnipatache sanskritik adhyayan.* Nagpur. Dr. Bhagchandra Jain Bhaskar, Head, Department of Pali and Prakrit, Nagpur University, Nagpur.

Punjabi

1. Anand, Gurcharan Kaur. *Varan Bhai Gurdas : Lok dhara mulak adhyayan.* Delhi.

2. Beant Kaur. *Fictional world of Ajeet Kaur.* Delhi.

3. Paramjit Kaur. *Jaswant Singh Neki dee kavita da alochanatmak adhyayan.* Delhi.

Hindi

1. Anita Rani. *Swatantrayottar Hindi upanyason mein lok sanskritik chetna ka swaroop.* Panjab.

2. Bhatnagar, Sangeeta. *Sur evam Tulsi ke kavya ka saundarya shastriya drishti se tulnatmak anusheelan.* Vikram. Dr. H.M. Budhalia, Department of Hindi, Vikram University, Ujjain.

3. Bhoop Singh. *Samkaleen Hindi kavita kee pragatisheel pravritiyan, san 1964 se 1984 tak.* JUN, Dr. S.P. Sudhesh, Centre of Indian Languages, Jawaharlal Nehru University, New Delhi.

4. Chaudhari, Savitri. *Shri Shyam Narayan Pandey : Vyaktitva aur krititva,* Rohilkhand. Dr. Nalini Ranjan, Hindu College, Moradabad.

5. Dubey, Nawalkishor. *Shuklottar Hindi sameeksha mein kavya tattwa vivechan.* Magadh.

6. Gandhi, Nisha. *Adhunik Hindi geet parampara mein navata ka swarup aur Virendra Mishra ka yogdan.* Vikram. Dr. (Mrs) Urmi Sharma, Department of Hindi, Govt. Girls College, Ujjain.

7. Gangvar, Madan Lal. *Radhaswami sampradaya : Sahitya aur darshan.* Rohilkand. Dr. V.S Bhardwaj, Bareilly College, Bareilly.

8. Narsaiah, K. *Srimad Bhagwad, Sur and Potana ka anuwad vidhan.* Osmania.

9. Puri, Kanchan. *Amritlal Nagar ke upanyason ke upjeevyou ka ganveshanatmak anusheelan.* Rohilkhand. Dr. R.K. Chaturvedi, Govt. Raza College, Rampur.

10. Rai, Dharmaraj. *Ramcharit Manas kee rachna prakriya ka adhyayan.* Ravishankar. Dr. V.K. Mishra, Prof. Department of Hindi, Durga College, Raipur.

11. Saini, Mast Ram. *Nayee kavita mein adhunik sabhyata sameeksha.* HP.

12. Saxena, Brij Bihari. *Pant ke kavya mein nari ka swarup.* Rohilkhand. Dr. Manjari Tripathi, Bareilly College Bareilly.

13. Saxena, Kusum. *Bareilly Janpad kee boli ka bhasha vaigyanik adhyayan.* Rohilkhand. Dr. S.S. Shukla, Upadhi College, Pilibheet.

14. Saxena, Satyavati. *Jayasi rachit 'Padmavat' mein auchitya vidhan.* Rohilkhand. Dr. R.N. Sharma, Hindu College, Moradabad.

15. Seshadri, K.N. *Swatantryottar Hindi kavita mein pragativadi chetana.* Bangalore. Dr. B. Nagesh Hatwar, Principal and Prof,, Department of Hindi, B.S.V. First Grade College for Women, Bangalore.

16. Singh, Data Ram. *Shahjahanpur Janpad kee boli ka bhashavaigyanik adhyayan.* Rohilkhand. Dr. S.S. Shukla, Upadhi College, Pilibheet.

17. Subhash Chander. *Premchand kee kahaniyon ka shailivaigyanik adhyayan.* Delhi.

18. Usha Rani. *Adhunik mahila Hindi upanyaskaron ke upanyason mein jeevan-mulya.* Rohilkhand. Dr. Umakant Sharma, Bareilly College, Bareilly.

19. Vashishth, Shachindra. *Ragyeya Raghav ke kavya mein yug-bodh.* Rohilkhand. Dr. P.L. Sharma, S.M College Chandausi.

Bengali

1. Mandal, Sasankasekhar. *Premathanatn Bisi : Jiban-o-sahitya.* Calcutta.

Maithili

1. Singh, Saratchandra. *Maithili ke aitihasik upanyason mein nayak ka swarup.* Calcutta.

Oriya

1. Meher, Gazendra. *Gangadharan ka kabyabalire bishaya binyasa.* Sambalpur. Dr. B.C. Acharya, Prof ., Department of Oriya,' Sambalpur University, Burla.

2. Senapati, Pradyamna Keshari. *Swadhinattora Odiya kabitare netibadi kavya chetana.* Sambalpur. Dr. Adikanda Sahoo, Reader, Department of Oriya, Sambalpur University, Burla.

Marathi

1. Baburao, Jyoti. *Marathi dalit sahityateel stree chitran, 1947 se 1977.* Nagpur. Dr. D.B. Kulkarni, Reader, Department of Marathi, Nagpur University, Nagpur.

Manipuri

1. Shantibala Devi, Koijam. *Anouba Manipuri dramada samajgi samasyasing.* Manipur. Shri Ch. Manihar Singh, Senior Fellow, Department of Manipuri Language and Literature, Manipur University, Imphal.

Tamil

1. Govindaswamy, P. *The language of Naccinaarkkinidar with special reference to noun phrase.* Kerala. Dr. K. Subramoney, Prof. and Head, Department of Tamil, University of Kerala, Kariavattom.

2. Varadarajan, M. *Panneerayira-p-padi : A study.* Venkateswara. Prof. P. Sourirajan, Department of Tamil, Sri Venkateswara University College, Tirupati.

Telugu

1. Anjaneya Sastri, Sagi. *Rakamacharla Venkatadasu kirtanalu jeevita vishlshalu.* Osmania.

Geography

1. Bhatnagar, Rani. *Kumaon Division : A study in urban central place system.* Rohilkhand. Dr. Usha Singh, Hindu College, Moradabad.

2. Harveer Singh. *Settlement pattern of the Rohilkhand : A geographical analysis.* Rohilkhand. Dr. H.R. Singh, Hindu College, Moradabad.

3. Jauhari, Shama. *Rohilkhand : A study in habitat, economy and society.* Rohilkhand. Dr. U.C. Gupta, Hindu College, Moradabad.

4. Mishra, Panch Lal. *Agricultural land-use and agro-industrial development in Moradabad Region, U.P.* Rohilkhand. Sri R.M. Mathur, K.G.K. College, Moradabad.

5. Patidar, Badrilal. *Nimar kee jansankhya tatha khadya sansadhanon ka bhougolik mulyankan, M.P.* Devi Ahilya. Dr. (Ku) Vijaya Phanse, Govt. Arts and Commerce College, Indore.

6. Singh, Janardan Prasad. *Changing pattern of land use and population in Buxar : A geographical analysis.* Magadh.

7. Singh, Om Prakash. *Problems and prospects of regional development in Kumaun-Himalaya : A study of resource appraisal.* Rohilkhand. Dr. H.R. Singh, Hindu College, Moradabad.

History

1. Basu, Ruma. *Changing fortunes of artisan production in Bengal and Bihar, 1872-1921.* Calcutta.

2. Ganesh, K.N. *Agrarian relations and political authority in medieval Travancore, A.D. 1300-1750.* JNU, Prof. R. Champakalakshmi, Centre for Historical Studies, Jawaharlal Nehru University, New Delhi.

3. Haque, Ishrat. *Society and polity as reflected in the Urdu poetry of the second half of the eighteenth century with special reference to Sauda and Mir.* Delhi.

4. Jain, Rajesh. *Madhyakaleen Rajasthan mein Jain Dharam.* Vikram. Dr. K C. Jain. Prof., Department of Ancient Indian History and Culture, Vikram University, Ujjain.

5. Jairath, Vrijender Kumar. *The archaeology of Northern Part of Bhavnagar District, Gujarat State upto C. 15th cent A D.* Baroda.

6 Mahajan, Gurpreet. *Historicism and historical explanation : A study of the methodological debate in History.* JNU. Dr. M.K. Palat, Centre for Historical Studies, Jawaharlal Nehru University, New Delhi.

7. Mohammad Arshad. *Poorvamadhya yugeen Bharatiya samaj evam dharam : Alvisani ke vivaranon ke pariprekshya mein.* Magadh.

8. Pal, Anil Ch. *A study of medieval saints and sufis and their teachings with reference to their contribution to Bengal.* Calcutta.

9. Pandey, Maheshwar. *Prachin Bharat mein rajtantra kee utpatti evam vikas : Vaidik kal se Gupta kal tak.* Magadh.

10. Singh, Birendra Kumar. *The people of Ancient Bihar : A socio-economic study, AD 500 to 1200 A.D.* Magadh.

11. Singh, Reena. *Maurya yugeen Bharat ka arthik itihas.* Magadh.

12. Trivedi, Krishnakishore. *Political administrative and cultural history of Jhabua State from 1857-1947.* Vikram. Dr. C.K. Tiwari, Principal, Govt. College, Sanghva.

EDUCATION NEWS INDEX

A List of Select Articles and Editorials on Education from Newspapers
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EDUCATIONAL PHILOSOPHY

Alam, Manzoor. No more centres of academic excellence. *The Hindu* 8 Nov. 1988.

Khullar, K. K. Has he lost his conscience? *National Herald* 3 Nov. 1988.

EDUCATIONAL PSYCHOLOGY

Srigiri Nath N.S. Nurturing a child's potentials. *The Hindu* 15 Nov. 1988.

EDUCATIONAL SOCIOLOGY

Raman, Usha. Why few women take to science? *Deccan Chronicle* 27 Nov. 1988.

Venkataramaiah, E S. We have Neros and zeros—no heroes. *The Statesman* 11 Nov. 1988.

EDUCATIONAL POLICY AND PLANNING

Amrik Singh. Education : Planning for the go's. *The Tribune* 29 Nov. 1988.

Mojumdar, Madhumita. Basics ignored in education policy. *The Statesman* 2 Nov. 1988.

EDUCATIONAL ADMINISTRATION

Chauhan, C.P.S. Policemen as V.Cs ! *The Hindustan Times* 16 Nov. 1988.

CHOICE OF NEW V.C.S. (*Editorial*). *The Indian Nation* 7 Nov., 1988.

FIGHTING INERTIA AT CALCUTTA UNIVERSITY (*Editorial*). *The Telegraph* 7 Nov., 1988.

Ramakrishna Rao, K. Coop. Colleges : Making education relevant to needs. *The Hindu* 8 Nov., 1988.

UNWISE RETALIATION (*Editorial*). *Indian Express* 3 Nov., 1988.

CURRICULUM

Kannan, S. Need to vitalise core subjects. *The Hindu* 15 Nov., 1988.

RENDERING HISTORY TO PEOPLE (*Editorial*). *The Hindu* 7 Nov., 1988.

Sarkar, Chanchal. Communication gaps. *Indian Express* 6 Nov., 1988.

Saxena, Pragati. "I like English Lit. because......" *Patriot* 27 Nov., 1988.

LANGUAGE & LANGUAGE POLICY

Amrik Singh. The three language formula. *The Tribune* 7 Nov., 1988.

SCIENCE EDUCATION

FROM LAB TO FACTORY (*Editorial*). *Amrita Bazar Patrika*, 7. Nov., 1988.

VOCATIONAL EDUCATION

Eichler, Thomas. Crop research for better results. The *Indian Nation* 15 Nov., 1988.

Mahajan, Krishan. SC and medical admission. *The Hindustan Times* 29 Nov., 1988.

Nandpuri, K. S. Researches on rabi crops. *The Tribune* 4 Nov., 1988.

RUSH FOR MEDICAL SEATS (*Editorial*). *Patriot* 25 Nov., 1988.

STRATEGIC PRIORITIES IN AGRICULTURAL RESEARCH (*Editorial*). *The Hindu* 15 Nov., 1988.

TEACHERS & TEACHING

Kannappan, D. Instruction planning—learner oriented approach. *The Hindu* 1 Nov., 1988.

PRIMARY TEACHERS (*Editorial*). *The Economic Times* 29 Nov., 1988.

TEACHER IMPROVEMENT (*Editorial*). *Deccan Herald* 12 Nov., 1988.

AN UNSEEMLY APATHY (*Editorial*). *The Hindu* 21 Nov., 1988.

EDUCATIONAL RESEARCH

Grant, N.B. What ails defence R & D units. *The Hindustan Times*, 14 Nov., 1988.

Mehta, Balraj. Strangulating Indian R & D. *The Tribune* 2 Nov , 1988.

MOVING TOWARDS A SYMBIOTIC INTERACTION. (*Editorial*) *The Hindu* 10 Nov., 1988.

Ramachandran, R. Planning R & D to meet needs. *The Hindu* 16 Nov., 1988.

Uma Prasad. Coherence determines "effectiveness in writing." *The Hindu* 22 Nov., 1988.

EDUCATIONAL TECHNOLOGY

Datta, R.K. SEARCC-88—an international convention. *The Economic Times* 28 Nov., 1988.

Marmar, M. Gaps in computer literacy. *The Hindu* 29 Nov., 1988.

Pawar, Rajendra S. Computers in education. *The Economic Times* 28 Nov., 1988.

Rai, A.N. Rural schools can benefit from satellite technology. *The Hindu* 15 Nov., 1988.

EDUCATIONAL EVALUATION

Ramanathan, G. Exam : The varsities gold mine. *The Hindu* 29 Nov., 1988.

ECONOMICS OF EDUCATION

Gulshan Kumar. Economics of brain migration. *The Indian Nation* 11 Nov., 1988.

HARD OPTIONS AHEAD (*Editorial*). *The Hindu* 16 Nov., 1988.

RURAL JOBS (*Editorial*). *The Statesman* 10 Nov., 1988.

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Gooptu, Pradeep. National Library cramped for space. *The Economic Times* 20 Nov., 1988.

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Ramaseshan, Geeta. Criteria for banning literary works. *The Hindu* 22 Nov., 1988.

Sen Rehana. Operation Blackboard and beyond. *The Statesman* 10 Nov., 1988.

PHYSICAL EDUCATION & SPORTS

Kidwai, Rasheed. Women's hockey : Whose responsibility ? *Patriot* 20 Nov., 1988.

POLITICKING IN SPORTS (*Editorial*). *The Tribune* 29 Nov., 1988.

Raghuraman, N. Sports must for building of body. *Free Press Journal* 16 Nov., 1988.

Thyagarajan, S. Unmet hopes and unkept promises. *The Hindu* 26 Nov., 1988.

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Anand, Anita and Bouabid, Ihsan. When the women begin to decide. (Adult Literacy in UAE). *National Herald*. 27 Nov.. 1988.

Datta Roy, Sachit. NAEP's temples of learning. *Patriot* 21 Nov., 88.

COMPARATIVE EDUCATION AND COUNTRY STUDIES

EDUCATION PLAYS AN IMPORTANT ROLE. *Free Press Journal* 18 Nov., 88.

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Basu, Tapati. Its' still the best (Present state of affairs at Calcutta University). *The Statesman* 20 Nov., 1988.

BIOGRAPHICAL PROFILE

C.V. Raman's birth centenary celebrations (*Special supplement*). *Deccan Herald* 11 Nov., 1988.

C.V. Raman's birth centenary celebrations (*Special supplement*). *The Telegraph* 2 Nov., 1988.

Krishnan, R.S. A physicist par excellence (C.V. Raman). *The Hindu* 6 Nov., 1988.

Paul, Asit. C.V. Raman—Scientist and social reformist. *National Herald* 2 Nov., 1988.

Raman Centenary (*Editorial*). *The Pioneer* 7 Nov., 1988.

Venkatavaradan, V.S. C.V. Raman : A centenary tribute. *Free Press Journal* 12 Nov., 1988.

UNIVERSITY GRANTS COMMISSION

The University Grants Commission has established 48 Academic Staff Colleges in different Universities for organising orientation programmes for newly recruited teachers. These Academic Staff Colleges will also take responsibility for conducting subject oriented refresher courses in Arts, Humanities, Social Sciences and Sciences for in service teachers, Universities/Institutions which have been identified discipline-wise for this purpose are indicated below :

S. No.	Subject	University/ Institution	Catchment Area Region	Whether ASC approved. If not nodal agency
Science				
1.	Chemistry	Delhi	North/Central	Yes
		Poona	West	Yes
		I.I.Sc.	South	No (Mysore Univ.)
		NEHU	Eastern	Yes
2.	Physics	I.I.Sc.	West	No (Mysore Univ.)
		Bharathidasan	South	Yes
		Jadavpur	East	Yes
		Rajasthan	Northern/Central	Yes
3.	Botany	Bharathiar Coimbatore	South	Yes
		Meerut	North/ Central	No (A.M.U.)
		Patna	West	Yes
		Calcutta	East	Yes
4.	Zoology	Kashmir	North/Central	Yes
		Madurai Kamaraj	South	Yes
		NEHU	East	Yes
		Marathwada	West	Yes
5.	Mathematics	Panjab	North	Yes
		Madras	South	Yes
		Rani Durgawati Jabalpur	Central/West	Yes
6.	Statistics	Indian Statistical Instt. Calcutta	East/ South	No (Jadavpur Univ.)
		Gujarat	North/Central/ West	Yes
7.	Geology	ISM Dhanbad	East/South	No (Ranchi Univ.
		Kumaon	Central/ West	No (Lucknow Univ.)
		Panjab	North	Yes
Social Sciences/Humanities				
1.	Economics	Gokhale Instt of Economics & Politics, Poona	West	No (Poona Univ.)
		Centre for Developing Studies (Trivandrum)	South	No (Kerala Univ.)
		JNU	North/Central	Yes
		Jadavpur	East	Yes
2.	Sociology	Delhi	Central/North/ West	Yes
		Hyderabad	East/South	Yes
3.	Social Work	TISS, Bombay	West	No (Bombay Univ.)
		Delhi	North/Central	Yes
		Andhra	East	Yes
		N.I.M.H.N., Bangalore	South	No (Mysore Univ.)
4.	History	Calicut	South	Yes
		Patna	East	Yes
		Osmania	West	Yes
		A.M.U	North/Central	Yes
5.	Philosophy	Panjab	North/Central	Yes
		Jadavpur	East	Yes
		Allahabad	West	Yes
		Andhra	South	Yes
6.	Library Sci.	Delhi	North/Central/ West	Yes
		Osmania	South/East	Yes
7.	Home Sciences	Lady Irwin College	North/ Central	No (J.M.I)
		Avnashilingam Instt. of Home Science, Coimbatore	South/East	No (Bharathiar Univ.)
		M.S. Univ. of Baroda	West	No (Saurashtra Univ.)
8.	Commerce	Delhi	North	Yes
		Andhra	South	Yes
		Rajasthan	Central/West	Yes
		Gauhati	East	Yes
		Madras	West	Yes
9.	Pol. Science	Panjab	North/Central	Yes
		JNU	East	Yes
		Bombay	West	Yes
		Osmania	South	Yes
10.	Psychology	Utkal	East	Yes
		Calicut	South	Yes
		Allahabad	North/Central/ West	Yes
11.	Geography	Panjabi	North/ Central	No (G.N.D.U.)
		Aligarh	West/East	Yes
		Madurai Kamaraj	South	Yes

1	2	3	4	5
12.	Journalism	Instt. of Mass Communication, New Delhi	North/Central/West	No (J.M.I.)
		Bangalore Uni.	South/East	No (Karnatak Univ.)
13.	Assamese	Gauhati	All India	Yes
14.	Hindi	S.V. Univ.	South	Yes
		BHU, Varanasi	North/Central	Yes
		Sardar Patel	West	No (Gujarat Univ).
		Burdwan	East	Yes
15.	Telugu	Andhra	All India	Yes
16.	Malayalam	Kerala	All India	Yes
17.	Oriya	Utkal	All India	Yes
18.	English	CIEFL	South	No (Hyderabad Univ.)
		Gauhati	East	Yes
		Poona	West	Yes
		Rajasthan	North/Central	Yes
19.	Music	M.S. Univ. of Baroda	All India	No. (Saurashtra Univ.)
20.	Bengali	Burdwan	All India	Yes
21.	Marathi	Nagpur	All India	Yes
22.	Punjabi	Panjabi	All India	No (G.N.D.U.)
23.	Sindhi	Bombay	All India	Yes
24.	Urdu	Osmania	South/East	Yes
		A.M.U.	North/Central/West	Yes
25.	Gujarati	S.N.D.T.	All India	No (Bombay Univ.)
26.	Tamil	Tamil	All India	No (Bharathidasan Univ.)
27.	Kannada	Mysore	All India	Yes
28.	Sanskrit	Poona	All India	Yes
29.	Education	Kurukshetra	North/Central/East	Yes
		Bombay	West/South	Yes
30.	Law	BHU	North/Central/East	Yes
		National Law School, Bangalore	South/West	No (Karnatak Univ).

Each identified University Department/Institution is expected to organise upto 5 refresher courses in major disciplines and 2 to 3 courses in a minor discipline/languages in a year. The duration of the course will be 3-4 weeks and the number of participants for each course will be upto 40. Teachers selected to undergo refresher courses will be treated as on duty. The host institution will provide free lodging and TA to the out-station participants will be paid as per rules of the University. Besides daily allowances will be admissible to local as well as outstation participants to cover boarding charges.

For further details, please contact the Director of Academic Staff College/Registrar of the University concerned. For those disciplines which are being organised at Universities/Institutions which do not have Academic Staff Colleges, please contact the Director of the designated Academic Staff College.

davp 88/519

INDIAN INSTITUTE OF SCIENCE

BANGALORE-560 012

REQUIRES

Senior Scientific Officer (in the post-doctoral programme on Bio-technology and Life Sciences) in the Molecular Bio-Physics Unit.

Qualifications and Experience: Ph.D. in the area of X-ray crystallography with atleast three to five years of post-doctoral research experience in biological macro-molecular crystrallography. Experience in data collection using Area Detector System is preferable.

Job Description: The selected candidate is expected to look after biological crystallographic facilities including an Area Detector System and participate in training, development and research activity in biological macro-molecular crystallography and related areas.

Emoluments: Rs. 4,390/- p.m. in the scale Rs. 3000-4500.

Duration: The appointment is upto 31st March, 1990 as of now, but likely to continue.

Details and prescribed application forms can be obtained from the Registrar, on request accompanied by an IPO for Rs. 5/- (free of cost to SC/ST on production of Caste Certificate from a competent authority) drawn in favour of Registrar, Indian Institute of Science, Bangalore-560012, alongwith a self-addressed Rs. 5-40 stampted envelope of the size 28 cms × 18 cms. **on or before 29th December, 1988.**

R(IA)308-47/88 **REGISTRAR**

INDIAN INSTITUTE OF SCIENCE

BANGALORE-560 012

Requires

Scientific Officers (Two Posts) (IA/308-44/88) under the Project Education and Research in Computer Networking at the Institute.

Qualifications : Master's Degree in

Electrical / Electronics / Communication Engg./Computer Science and Engineering with specialisation in Computer Communication or Computer Networking or Computer Hardware/Software or Communication System Hardware/Software.

(Those who are expected to complete ME/MTech programme by January, 1989 may also apply).

The appointment is upto 30th June, 1990, but, likely to continue.

Emoluments: Rs. 3,256/- p.m. in the scale Rs.2200-4000.

Details and prescribed application forms can be obtained on request from the Registrar, Indian Institute of Science, Bangalore, accompanied by an IPO for Rs. 5/- (free of cost to SC/ST on production of Caste Certificate from a competent authority) drawn in favour of him, alongwith a self-addressed Rs. 5.40 stamped envelope, of size 28 cms × 18 cms. **on or before 23-12-1988.**

REGISTRAR

CLASSIFIED ADVERTISEMENTS

PONDICHERRY UNIVERSITY

128, RANGAPILLAI STREET
PONDICHERRY

JOB OPPORTUNITIES IN UNIVERSITY COMPUTER UNIT

Applications are invited in the prescribed form for the following positions in Computer Science Unit of the Department of Mathematics :

1. **Reader**

Qualifications : Essential

A consistently good academic record with

(a) a Ph.D. Degree and Record of published papers in the relevant area with 6 years experience in Teaching/Research at Lecturer's or equivalent level even in industries.

OR

(b) MS/M. Tech./ME in Computer Science or Computer Engineering and record of published papers with 6 years experience in Teaching & Research at Lecturer's or Corresponding level even in industries.

Scale of Pay : Rs. 3700-125-4950-150-5700

Age limit : 45 years

2. **Lecturer**

Essential Qualifications : A consistently brilliant academic record with

(a) Ph. D. Degree in Computer Science or allied disciplines and a record of published work.

OR

(b) MS/M. Tech./ME in Computer Science/Computer Engineering or MCA with record of published work preferably with prior teaching experience of two years or equivalent work in industries.

Scale of Pay : Rs. 2200-75-2800-100-4000

Age limit : 40 years

3. **Technical Assistants**

Essential Qualifications : A good academic record with

(a) M.Sc. in Computer Sciences with 2 years' relevant experience

OR

(b) BE/B. Tech. in Computer Science or Engineering or Electronics Engineering with 2 years' relevant experience.

OR

(c) DCA with 3 years' relevant experience in handling Computer systems.

Scale of Pay : Rs. 1640-60-2600-EB-75-2900.

Age limit : 35 years.

The age limit is relaxable by 5 years in the case of SC/ST candidates.

Outstation candidates, called for interview will be paid only T.A. round trip II Class Railway fare/Bus fare through shortest route.

Reservation for SC/ST, Physically handicapped candidates will be made as per Government of India guidelines on the subject.

The University reserves the right to shortlist candidates for interview. The application forms can be had from the office of the undersigned on payment of registration/stationery fee of Rs. 50/- by a Demand Draft/Postal Order drawn in favour of Finance Officer, Pondicherry University, Pondicherry. SC/ST candidates are exempted from payment of this fee, on enclosing a Community Certificate from any competent authority.

Last date for the receipt of application is 30-12-1988.

P.R. Ramanathan, I.A.S.
REGISTRAR

TAMIL UNIVERSITY

THANJAVUR

Applications in the prescribed form in quadruplicate are invited for the following posts :

Name of the Post : Assistant Librarian—One Post

Scale of Pay : Rs. 700-40-1100-50-1600/- (UGC—Pre-revised)

Name of the Post : Library Assistant Grade II—Two Posts

Scale of Pay : Rs. 705-20-745-25-845-35-1230/-(State Govt.)

Application blanks and details of qualifications etc. can be had from the "Registrar, Tamil University, Thanjavur-613 001" paying Rs. 25/- by means of Money Order/Demand Draft (Rs. 6.25 for SC/ST) in favour of the "Finance Officer, Tamil University, Thanjavur-613 001" together with a self-addressed envelope (31 cm. × 13 cm) bearing the postage to the value of Rs. 2.60.

The cost of application blanks will not be refunded under any circumstances.

Last date for the receipt of filled in application is 9.1.1989.

Dr. P. Chinnian
REGISTRAR

PUNJAB AGRICULTURAL UNIVERSITY LUDHIANA

ADDENDUM TO ADMISSION NOTICE

It is notified that the last date for receipt of applications for admission to Ph.D. programme is extended upto 31st December, 1988.

REGISTRAR

MANIPUR UNIVERSITY

CANCHIPUR, IMPHAL-795003

Advertisement No. 9/88 **Dated : the 21st November, 1988**

No. MU/4-16/87/FCY : Applications are invited for the following posts :

Post	Department	No. of Posts	Specialization
Professor	1. A Chair in Linguistics	1 (Temporary, initially for 2 years)	An eminent linguist, not necessarily Manipuri knowing. The Professor will be required to make a critical review of Grierson's works on Indian Languages in general and Sanskrit in particular during the period of appointment.
	2. Economics	1	Open
	3. Chemistry	1	Physical
	4. Linguistics	1	(i) Tibeto-Burman Linguistics (ii) Comparative Linguistics and/or Sociolinguistics
	5. Anthropology	1	Open
	6. Earth Sciences	1	Geology (Open)
Associate Professor	1. English	1	English Language Teaching (Method)
	2. Life Sciences	1	Open
		1 (Temporary 2 to 3 years)	Ecology
	3. Commerce	1	Accounting & Finance
Assistant Professor	1. English	1	American Literature/Language
	2. History	1	Archaelogy/Medieval Indian History
Systems Engineer	Computer Centre	1	

Scales of Pay

Professor : Rs. 4500-150-5700-200-7300/- p.m.

Associate Professor : Rs. 3700-125-4700-150-5700/- p.m.

Assistant Professor : Rs. 2200-75-2800-100-4000/. p.m.

Systems Engineer : Rs. 3000-100-3500-125-5000/- p.m.

Essential Qualifications

1. **Professor :** An eminent scholar with published work of high quality actively engaged in research in the relevant field. About 10 years experience of teaching and/or research. Experience of guiding research at doctorate level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge in the relevant field.

2. **Associate Professor :** (a) Good academic record with a doctorate degree or equivalent published work in the relevant field. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

(b) About 5 years experience of teaching and/or research provided that at least three of these years were as Assistant Professor/Lecturer or in an equivalent position.

This condition may be relaxed in the case of candidates with outstanding record of teaching/research.

3. **Assistant Professor :** (a) Master's degree in the relevant subject with at least 55% marks or its equivalent grade and good academic record.

(b) M.Phil and Ph. D. are desirable qualifications. The minimum qualifications prescribed in (a) above shall not, however, be relaxed even in respect of candidates who have research degrees like M.Phil/Ph.D.

4. **Systems Engineer :** M.Tech in Computer Science/Technology or M Sc. in Physics/Mathematics/Statistics, B.E./B. Tech with Post Graduate Diploma in Computer Science/Application and at least 2 years' working experience in Computer system and requisite training in hardware and software of Computer Systems.

N.B. : Deserving candidates who do not fulfil all the qualifications mentioned above may be considered in the lower pay scale equivalent to that of the Assistant Professor.

Candidates invited for interview will be given 1st Class (for Professors) and 2nd Class (for other posts) railway fare as T.A. from the place of origin and back or the actual expenses on fare, whichever is less.

How to Apply : Applications, on plain paper (in duplicate) with attested copies of certificates in support of qualifications and experience showing candidate's name, father's name, date of birth, address for correspondence, academic & professional attainment, teaching/working & research experience field of specialization, publications (to be enclosed with reprints), seminars/conferences attended, details of visits to foreign countries and assessment reports from at least two persons well acquainted with the candidate's professional work should reach the Registrar Manipur University, Imphal-795003 on or before 21-12-88.

Applications received late or incomplete in any respect may not be entertained. Persons already in service must apply through their employers so as to reach this office on or before the last date fixed. No candidate will be considered for appointment unless he/she produces a 'No objection certificate' from his/her employer at the time of interview.

Retired persons who have not attained the age of 62 years may also apply for appointment on contract basis. It will be open to the University to consider the names of suitable candidates who may not have applied.

PONDICHERRY UNIVERSITY

128, RANGAPILLAI STREET
PONDICHERRY

Applications are invited in the prescribed form for the Faculty positions in the following disciplines of this University with the University Grants Commission Scales of Pay and Allowances.

I. DEPARTMENT OF PHILOSOPHY (NEWLY SANCTIONED DEPT.)

Professor

Qualifications (a) An eminent Scholar with published work of high quality, actively engaged in Research. About ten years experience of teaching and/or research with a Ph.D. Degree in Philosophy/Logic/Allied fields.

(b) Experience of guiding Research at Doctoral Level (or) an outstanding scholar of eminence with established reputation who has made significant contribution to knowledge.

(If sufficient number of high calibre candidates are not applying the University reserves the right to invite eminent scholars.)

Reader

Qualifications (a) Good Academic Record with a doctoral degree or equivalent published work in philosophy/Logic/Allied fields. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

(b) About five years experience of teaching and/or research provided that atleast three of these years were as Lecturer or in an equivalent position.

Lecturer

Qualification (a) A doctorate degree or research work of an equally high standard in Philosophy / Logic / Allied field.

(b) Good Academic record with atleast High Second class in Master's Degree in Philosophy from an Indian University or an equivalent Degree from a foreign University.

II SCHOOL OF DRAMA

Reader

Qualifications : Good Academic Record with a doctoral degree or equivalent published work in Drama/Stage Craft/Theatre Arts or related field. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About 5 years teaching experience and/or research provided that atleast three years were as Lecturer or in an equivalent position.

Preference will be given for Media Excellence like writing Radio, TV Drama, Play production, etc.

Lecturer

Qualifications (a) A doctorate degree or research work of an equally high standard in Drama/Stage Craft/Theatre arts etc.; and

(b) Good Academic Record with atleast High Second class Master's degree in Drama/Stage Craft, Theatre Arts or related field with atleast a Degre or PG Diploma in Drama/Stage Craft/Theatre Arts and experience in play production/knowledge on Folk Theatre and Folk forms.

SCALE OF PAY

Professor : Rs. 4500-150-5700-200-7300
Reader : Rs. 3700-125-4950-150-5700
Lecturer : Rs. 2200-75-2800-100-4000

AGE LIMIT

Professor : 50 years () relaxable by
Reader : 45 years () 5 years in the
Lecturer : 40 years () case of SC/ST candidates.

The University reserves the right to relax the qualifications prescribed in the case of suitable and deserving candidates with outstanding record of teaching/research.

The University reserves the right to shortlist candidates to be called for interview.

Reservation to SC/ST and Physically Handicapped candidates will be made as per Govt. of India guidelines in the subject.

Outstation candidates called for interview will be paid to and fro II class Railway fare/Bus fare through shortest route.

Printed Application forms can be obtained through requisition to the undersigned accompanied by payment of registration/stationary fees of Rs 50/- (Rupees fifty only) by a Demand Draft/ Postal Order drawn in favour of Finance Officer, Pondicherry University, Pondicherry and payable at Pondicherry. SC/ST candidates are exempted from payment of this fee on enclosing a certificate from any competent authority.

Application forms duly filled in with copies of certificates, testimonials, etc., should reach the Registrar on or before **30-12-88** (December 30th, 1988).

Canvassing in any form will be a serious disqualification.

P.R. Ramanathan, I.A.S.
REGISTRAR

SHREEMATI NATHIBAI DAMODAR THACKERSEY WOMEN'S UNIVERSITY,

BOMBAY-20

Advertisement No. 13

Applications are invited in the prescribed forms (8 copies) available from the S N D.T. Women's University Office, 1, Nathibai Thackersy Road, Bombay-400020, on payment of Rs. 25/- (by M.O /Indian Postal Order/in Cash) for the post of REGISTRAR, Shreemati Nathibai Damodar Thackersey Women's University, Bombay, so as to reach the undersigned not later than **December 26, 1988.**

Pay Scale : Rs. 1500-50-1700-75-2000-125/2-2250 plus admissible allowances under the University rules (Pay Scale likely to be revised).

Total initial emoluments inclusive of allowances will be approximately Rs. 4,400/- per month.

Qualifications & Experience

(i) A Master's Degree, atleast in Second Class of a Statutory Indian University or a Degree recognised as equivalent thereto. Preferential additional qualifications :
  (a) Ph.D.
  (b) Bachelor's Degree in Law.
  (c) Diploma/Degree in Management/Education Management or Education Administration.

(ii) A person to be appointed to the post of Registrar should have :
  (a) Atleast ten year's administrative experience in a responsible executive position in an educational institution, preferably in a University or in a Government Department.
  OR
  (b) Atleast five years' teaching experience in a College or a University Department and five years' administrative experience, in a responsible executive position in an educational institution; preferably in a University or in a Government Dept.

(iii) Proficiency in English and knowledge of Marathi and any other medium of instruction prevalent at

the University, that is Gujarati or Hindi.

(iv) At the time of appointment the candidate for the post of Registrar should not be below 35 years and above 50 years of age. This age limit will not apply to a candidate who is already in the service of the University.

Note

1. Only suitable candidates will be called for interview.
2. Women candidates will be given preference.
3. Responsibilities, service conditions of the post as per statutes and as laid down from time to time.
4. Quarters will be provided in Campus, if needed.

MASS COMMUNICATION RESEARCH CENTRE

JAMIA MILLIA ISLAMIA

JAMIANAGAR, NEW DELHI : 110025

Advertisement No. II/1988

Dated : 29-11-1988

The Mass Communication Research Centre invites applications for the following posts :

I. Professor—TV (one)
(Rs. 4500-7300)

Educational & other qualifications

Essential

(i) Degree of a recognized University;

(ii) Degree or Diploma or equivalent in video production from a recognized University or Institute;

(iii) At least six years' professional experience including teaching in video production in an institution or organization of repute;

OR

(i) Master's Degree of a recognized University; and

(ii) At least 8 years' professional experience including teaching in video production in an institution or organization of repute.

OR

(i) Degree of a recognized University or equivalent;

(ii) At least 10 years' professional experience including teaching in video production in an institution of repute.

Desirable

Good knowledge of Radio, Film and T.V. Medium in India and abroad.

II. Research Scientist 'A' (one)
(Rs. 700-1600 : now revised to 2200-4000)

Educational & other qualifications

Essential

(i) Master's Degree in one of the following areas : Social Sciences, Natural Sciences or Communication

(ii) Intensive experience in Communication Research involving collection and analysis of field data.

Desirable

(i) Knowledge of experimental design, experience in collection of social science data at the district, town and village level and also knowledge of various methods of analysis.

(ii) Ability to participate as member of team in the pre-testing and production of U.G.C.'s Countrywide Classroom.

(iii) Self-starter with individual initiative.

(iv) Interpersonal communication skills.

(v) Report writing ability.

Experience : Three years.

III. Production Manager (one)
(Rs 700-1300 likely to be revised)

Educational & other qualifications

Essential

(i) Degree of a recognized university or equivalent with five years experience in a Film/TV production organization of repute in a responsible capacity including experience in handilng Studio staff and making arrangements for film shooting programmes.

OR

(i) Degree/Diploma in Direction of Film TV production from a recognized institute or equivalent.

(ii) About three years experience in a production department of a Film/TV production organization of repute in a responsible capacity.

Desirable

(i) Knowledge of Urdu-Hindi

(ii) Administrative experience

Age : Below 40 years.

IV. Unit Manager (one)
(Rs. 1640-2900)

Educational & other qualifications

Essential

(i) Degree/Diploma in Direction or Motion Picture Photography or equivalent from a recognized University/Institute.

OR

(ii) Matriculation with five years' experience as Unit Manager or Production Assistant in a Film/TV Studio.

Desirable

Knowledge of Urdu-Hindi/Administrative experience.

Age : Below 30 years.

Note

Any of the quallfications mentioned above can be relaxed at the discretion of the Selection Committee in the case of candidates otherwise exceptionally qualified.

DA, CCA, HRA, PF, Gratuity, Pension and other benefits will be given as per Jamia Rules.

Application forms can be had from the Administrative Officer, Mass Communication Research Centre, on any day except Saturdays, Sundays and Holidays, either personally between 10.00 a m. to 12 noon or by sending a self-addressed and stamped envelope. Application should be accompanied with crossed Indian Postal Order or a Bank Draft for Rs. 7/- (Rs. 2/- for SC/ST candidates) in the name of the Administrative Officer, Mass Communication Research Centre, Jamia Millia Islamia, New Delhi-110025.

The last date for receipt of applications is **24th December, 1988.**

M.B. Mughal
ADMINISTRATIVE OFFICER

SANJAY GANDHI POST GRADUATE INSTITUTE OF MEDICAL SCIENCES,

POST BOX NO 375, RAE BARELI
ROAD, LUCKNOW-226 001 (UP)

CORRIGENDUM TO ADVT. NO. 44/88

EXTENDED LAST DATE :

December 15, 1988

SENIOR RESIDENT TEST DECEMBER 1988

(i) Upper age limit is now extended to 35 years, it is relaxable by five years for SC/ST candidates.

(ii) Candidates who are appearing at MD/MS or other qualifying examinations can also appear provisionally at the test subject to availability of result on the day of examination.

(iii) Last date for submission of applications stands extended to **December 15, 1988.**

(iv) Selection test is postponed from December 8 to December 25, 1988 to be held at SGPGI Campus, Lucknow.

(v) Other conditions remain unchanged.

Prof B B. Sethi
DIRECTOR

ANDHRA PRADESH AGRICULTURAL UNIVERSITY

ADMINISTRATIVE OFFICE 'RAJENDRANAGAR', HYDERABAD-500030.

Advertisement No. 5/PC/88 **Dated : 26-11-1988.**

LIMITED RECRUITMENT CONFINED TO SCHEDULED CASTE AND SCHEDULED TRIBE CANDIDATES

Applications are invited from qualified candidates belonging to Scheduled Caste and Scheduled Tribe for the following posts :

SUBJECT	Assoc. Prof. Cadre Rs, 1200-1900 (U.G.C. Scale Old Scale)	Instructor cadre Home Science Rs. 1380-2750 for Veterinary Instructors Rs. 1380-2750 (likely to be revised)
I. FACULTY OF HOME SCIENCE		
1. Foods & Nutrition	—	2
2. Human Development and Family Studies	1	1
3. Textiles & Clothing	—	1
4. Extension	—	2
5. Family Resources Management	1	—
	2	6
	(S.C.—1.S.T. 1)	(S.C.4, S.T.-2)
II. FACULTY OF VETERINARY SCHEME		
1. Anatomy	—	1
2. Animal Nutrition	—	2
3. Dairy Science	—	4
4. Fisheries Science	—	1
5. Genetics & Animal Breeding	—	1
6. Parasitology	—	1
7. Pharmacology	—	1
8. Poultry Science	—	1
		12
		(S.C.—7, S T.—5)

NOTE : In case sufficient candidates are not selected in one discipline, the same is likely to be made up in other disciplines.

Full details regarding the qualifications prescribed for the posts, other particulars and the application forms can be had from the University on payment of Rs. 10/- in person or through a crossed demand draft drawn from State Bank of India, State Bank of Hyderabad and Andhra Bank, in favour of the Comptroller, A.P. Agricultural University, Rajendranagar drawn on the State Bank of Hyderabad, Rajendranagar Branch. **(I.P.O.s will not be accepted).** A self-addressed and stamped Rs. 2-50 envelope of the size of 35cm × 15 cm may also be sent. The covers containing the requisitions for application forms must be superscribed "Requisition for application form" and addressed to Registrar, Administrative Office, Andhra Pradesh Agricultural University, Rajendranagar, Hyderabad-500030.

The last date for receipt of application forms is **27.12.88.**

K.M. Azam
REGISTRAR

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY

TRIVANDRUM-11.

(An Institute of National Importance under Government of India).

Advt. No. 12/Sctimst/88

Dated : 25-11-1988.

Invite applications from Indian Nationals for the following posts.

1. **Chief Blood Transfusion Officer**
2. **Lecturer in Cardiology**

Scale of Pay : (Pre-revised) (With appoximate total emoluments at start in brackets)

Post-1 : Rs. 1800-75-2100-100-2400/- (Rs. 4559 plus HRA)

Post-2 : Rs. 1500-60-2040/- (Rs. 3912 plus HRA)

(The Revision of scales of pay is under consideration)

Maximum Age Limit as on 1-12-1988.

Post-1 : 40 yrs.
Post-2 : 35 yrs.

Qualification & Experiences

Post-1 : (a) MBBS from a recognised University and DCP/DIB

(b) Five years experience in Blood Transfusion work in a large hospital of not less than 500 beds or a hospital for advanced specialities. Candidates should have knowledge of modern blood bank techniques as blood component separation and therapy.

M.D. (Pathology) with experience in Haematology) will be an additional qualification.

Post-2 : (a) A Medical qualification included in the 1st or 2nd Schedule or part II of the third Schedule to the Indian Medical Council Act, 1956 (persons possessing qualifications included in part II of the third Schedule should also fulfil the conditions specified in section 13 (3) of the Act.

(b) DM/FRCP (c)/American speciality Board Certification/Diploma of the National Board in the speciality.

Age, qualification, experience, etc. relaxable in exceptional cases.

Application on plain paper with biodata of the Candidate and attested copies of Certificates of educational and professional qualification, date of birth, experience etc. should reach the undersigned on or before **31-12-1988.**

DIRECTOR

KENDRIYA HINDI SHIKSHAN MANDAL, AGRA

Advertisement No. 3/88-89

Kendriya Hindi Sansthan invites applications from Indian citizens for the following posts :

Sl. No.	Post	Subject	Clear Vacancy	Unreserved	S. C.	S. T.	Leave Vacancy
1.	**Professor**	Applied (Hindi) Linguistics	1	—	1	—	2
2.	**Reader**	-do-	4	3	1	—	2
3.	**Reader**	Education	1	1	—	—	—
4.	**Lecturer**	Applied (Hindi) Linguistics	2	1	—	1	4
5.	**Lecturer**	Hindi Literature	1	1	—	—	—
6.	**Lecturer**	Education	2	1	1	—	—
7.	**Lecturer**	Language Technology	1	1	—	—	—

Pay and Allowances : Professor—Rs. 4500-7300, Reader—Rs. 3700-5700, Lecturer—Rs. 2200-4000 **plus all allowances admissible to Central Govt. employees.**

Age Restriction (on 31.1.1989) : Professor : Not below 35 years.

Reader : Not below 30 years. Relaxable as per rules.

Reserved Posts : Candidates of S.T. can also apply for the post of Professor and Reader reserved for S.C.

For application forms and other particulars write to Director, Kendriya Hindi Sansthan, Hindi Sansthan Marg, Agra-282005 with Rs. 3/- **Stamped** self-addressed envelope (28×13 cm) giving **Serial No. and Name of the Post** or obtain from the counter during working days (10 A.M. to 5. P.M.). Separate application should be sent for each post. Basically the post No. 1 to 6 are meant for the Hyderabad, Gauhati, Shillong and Mysore centres only. **Closing Date for Receipt of Application in Agra Office : 31.1.89. For applicants from abroad the closing date is 15.2.89.**

Candidates who had applied for the above posts in response to the advertisement No. 6/87-88 made in November, 87 need apply again if still interested.

MOHANLAL SUKHADIA UNIVERSITY

UDAIPUR-313001.

Advertisement No. 5/88

Dated : November 24, 1988.

Applications are invited on prescribed application form for the following posts. Application form and full details about qualifications etc. prescribed by the University can be obtained from Deputy Registrar (Recruitment), University Office on payment of Rs. 5/- by cash/IPO payable to Comptroller, Mohanlal Sukhadia University, Udaipur alongwith a self-addressed envelope of 27cms. × 12cms. with Postal Stamps of Rs. 2.20. Last date for the receipt of complete application : **DECEMBER 24, 1988.**

Candidates who have already applied for these posts in response to our earlier advertisements during 1986-87 need not apply again. However, they may send their Bio-data on plain paper to update the same.

Professor : Pay Scale : Rs. 4500-150-5700-200-7300.

Political Science-1, Meera Chair (Rajasthani)-1, History-1.

Reader (Associate Professor) : Pay Scale : Rs. 3700-125-4950-150-5700.

Rajasthani-1, Hindi-1, Physics-1, Accounts & Statistics-1, Banking & Business Economics-1, Business Management-2, Senior Research Officer/Deputy Director (Population Research Centre)-1.

Lecturer (Assistant Professor) : Pay Scale : Rs. 2200-75-2800-100-4000.

Political Science-2, Hindi-1, History-1, Economics-1, Drawing & Painting-1, Chemistry-4, Mathematics-1, Zoology-2, Physics-1, Botany-2, Geography-2, Law-1, Business Management (M.B.A.)-1, Research Officer (Population Research Centre)-1.

Deputy Librarian-1 : Pay Scale : **Rs.** 1200-50-1300-60-1900 (Old U.G.C.).

Assistant Engineer (Electronics)-2 : Pay Scale : Rs. 1720-40-2000-50-2300-60-2600-75-3050-100-3350 (State Govt.).

General Note : 1. Number of posts **may be increased or decreased.**

2. The University reserves the right not to fill up post(s) advertised.

3. Reservation for SC/ST candidates as per rules of the University.

4. Applications received after last date will not be entertained.

REGISTRAR

BHAVNAGAR UNIVERSITY

UNIVERSITY CAMPUS
GAURISHANKER LAKE ROAD,
BHAVNAGAR-364 002.

The last date for the receipt of applications for Faculty positions in the University, notified vide Notification No. 9/88 has been extended upto **25/12/88.**

Dr. R.S. Mehta
REGISTRAR

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University News

FD52

MONDAY, DECEMBER 19, 1988 Rs. 2.50

hri S.L. Kirloskar, a leading industrialist, delivering the Convocation Address at the SNDT Women's University, Bombay. Seated on his left are Smt. K.H. Bhansali, Vice-Chancellor and Shri Brahmanand Reddy, Governor of Maharashtra.

RAYAT SHIKSHAN SANSTHA
SATARA (MAHARASHTRA)

WANTED

Applications in the prescribed forms are invited for the post of a 'PRINCIPAL' for the College conducted by Rayat Shikshan Sanstha.

Minimum Qualifications : (1) Consistently good academic record with at least second class (C in the seven point scale) Master's degree in relevant subject in Arts, Science, Commerce faculty from an Indian University or equivalent degree from a foreign University.

AND

(2) M.Phil degree or recognised degree beyond the Master's level or published work indicating the capacity of a candidate for independent research work.

Experience : At least 12 years experience as a College teacher approved by the University.

Pay Scale : Rs. 1200-50-1300-60-1900.

Candidate of the Backward Class community will be given preference. Initially the person selected shall be appointed on no-grant College in Shivaji University area, however, he will be transferable to any College of the Sanstha.

For the form of application, please apply by sending a self addressed envelope of 25 cms x 10 cms size and a crossed postal order of Rs. 15/- drawn in favour of Secretary, Rayat Shikshan Sanstha, Satara.

Applications should reach the undersigned on or before **10th January, 1989**.

SECRETARY

Rayat Shikshan Sanstha, Satara

(MAHARASHTRA).

UNIVERSITY NEWS

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Editor :
SUTINDER SINGH

University Autonomy and Accountability

Anand Sarup*

The very fact that the Association of Indian Universities has set up a Committee to look into various issues pertaining to autonomy and accountability indicates that, while a general acceptance of the ideas of autonomy and accountability exists, these concepts have not been defined in detail.

Looking far back into the history of civilisation, one realises that the autonomy of "Educational" institutions was derived essentially from the religious character of education, imparted primarily to ensure that knowledge about Gods and Goddess and ritualistic practices to propitiate them remained unaltered. Everybody wanted this to be passed on from one generation to another, by designated social functionaries, without any "distortion". It was found that any departure from hallowed practices might evoke the anger of celestials who were ferociously concerned about everything being done exactly as ordained and were likely to devastate whole generations and countries because of one little mistake or aberration. This belief naturally ensured complete autonomy for the prevailing "educational" system which was superseded only when another group, with its own gods and spirits, conquered that society.

Thus, for centuries, education as a religious function remained insulated, except in the case of conquest by other communities with a different faith from secular intervention, which started intervening after the wheel was invented, particularly following the discovery of gun powder. These and other technological developments destroyed the insularity of closed societies and later, the industrial revolution exerted tremendous pressure for expanding the content and role of formal and informal education. The forces unleashed by the industrial revolution, resulted in progressive dismantling of the feudal order, in which, within its own niche, a certain kind of classical highly structured "education" had continued to be imparted under the watchful eyes of churches which monitored and dealt exemplary punishment to original thinkers and non-conforming institutions

For several centuries now education has largely been the handmaid of the state, generally propagating the philosophy of the rulers. However, after the advent of liberalism and rationalism which later adopted a pluralistic approach to societal processes, educational systems have tended to change with the times. However, this change, particularly in hoary institutions, has been at a pace considerably slower than the requirements of socio-economic, cultural and political development. That is why, over the last one hundred years, a large number of new educational institutions came to be established all over the world with objectives and systems more in tune with the times. The emergence of these institutions has forced the older institutions also to recognise the inevitability of change and forced them to subordinate their "autonomous" will to the writing on the wall During the last 10 years, the entire

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[Paper presented at the 63rd Annual Meeting of AIU held on December 5-7, 1988].

**Chairman, National Book Trust, New Delhi* educational system in the United Kingdom has been in a state of turmoil largely because the Parliament and the industry have been putting pressure on educational institutions to introduce basic changes not only in the content of education but also in their organisational structure and their style of management.

In the case of the United States, educational institutions enjoy a very precarious kind of autonomy. This is largely because, except for state universities which in any case are rated as second rate institutions essentially because of their ponderous inflexibility, front-line universities, etc. are quick to adopt changes which would enable them to respond to new socio-economic challenges, chiefly because they derive most of their funds from industry and private foundations set up by entrepreneurs. This process of fund-raising curtails the functional autonomy of these institutions and, in certain cases, forces them even to adapt or subordinate their ongoing programmes in favour of well-endowed multi-disciplinary tasks, which often require them to work within the discipline of an external agency laying down the policy, the plan and the system of coordination and monitoring within a multi-institutional network. This involves a great many compromises with institutional "autonomy" which seems to be acceptable to the most prestigious institutions.

The achievements of the socialistic countries in the field of education are, on the whole, so impressive that their style of planning and functioning also needs to be considered in the context of the debate on "autonomy" and "accountability." In this connection, it would be adequate to state that whatever "autonomy" is enjoyed by academic institution is not because of some "divine" right but because of the anxiety of the state to encourage the continuance of processes which are perceived as contributory to the social goals adopted by the state.

One of the points that emerges from the observations in the preceding paragraphs is that "autonomy" of academic institutions cannot be regarded as an eternal, immutable and unchallengeable concept, to be protected like a holy cow, irrespective of whatever may be happening in the institutions. It has necessarily to be seen in the light of performance, against the framework of social context, political enviornment, economic imperatives and technological challenges. There is a strong belief that in the long run, universities and other academic institutions, will fare much better if the issue of their autonomy is viewed as an organisational or managerial pre-requisite for the fulfilment of the nature of responsibilities assigned to them with regard to research, teaching and extension. However, before proceeding further along this line of reasoning, it seems necessary to reinforce the case for autonomy for a very fundamental reason also. While, on the one hand, universities, etc. are admittedly the creations of the state, functioning within the constraints of the total system, these very institutions are required to catalyse the emergence of ideas for a new social order for the coming decades. On careful thinking it does appear that unless those segments of academic institutions which are engaged in fundamental research or evolution of futuristic thought, are insulated from the rough and tumble of populist pressures, these institutions will not be able to do anything worthwhile in these areas which are crucial to be very survival of the socio-cultural systems. If academic institutions remain bogged down only with the ephemeral issues of the day, they will not be able to prepare people passing through their portals for the battles of tomorrow, which, we know by now, will be qualitatively different from the challenges of yesterday and today. While conceding that the issue of "autonomy" assumes a somewhat different charter when viewed in the context and also admitting that this question has generally not been brought up in this context, one must emphasise that the case for autonomy of academic institutions should rest largely upon whether or not an institution is engaged in this kind of work. Otherwise the term "autonomy" should be used only to denote "functional freedom" in a strictly managerial sense.

II

Having concluded that it would be realistic to look at "autonomy" in terms of a managerial concept of "functional freedom", it seems essential to remove a misunderstanding which, very often, jeopardises rational discussion on this issue. Autonomy of Universities, etc. does not mean the autonomy of Vice-Chancellors. As of today, Vice-Chancellors, are required to function, not as ordinary mortals heading Universities, but as extraordinary people who can cope with administrative, academic, moral and political problems, of any magnitude, on their own. On the other hand, the way Vice-Chancellors get sacked, the manner in which some of them manouver to get themselves appointed and the number who spend their tenure away from the campuses, under police protection, behind barbed wire, proves that we must stop being unrealistic in our expectations from them. It would be fair not only to the university system but also to the Vice-Chancellors themselves if we recog-

C.F.T.R.I., MYS

nise that they are, despite their stature and academic excellence, capable of doing only so much and no more. In these democratic times, people do not normally grow into supermen and those who start believing that they are much taller than others, usually fall flat on their faces.

Gone are the days when Vice-Chancellors were expected to call only upon the Government and Chief Ministers. Ordinary Ministers dared not send for them. Mere secretaries to government did not keep them waiting in their anterooms and they too did not go from clerk to clerk to get their grants released or their sanctioned posts unfrozen. Politics was always a feature of university life but it was not the politics of the gutter. In any case, the process of decision-making had not become so complex with so many bodies comprising elected members, so many trade unions, rotation of incumbents at the levels of Heads of Departments and Deans and the Courts declaring universities as industrial establishments. Moreover, university education had not got devalued because of large scale unemployment among graduates and post-graduates. Even forty years back, people came to the universities, not merely to go through the motions of studying for want of anything better. They, then came in pursuit of education with the confidence that if they graduated, they would get a respectable job.

Today, there is a great confusion between roles and responsibilities. Vice-Chancellors are the only ones held responsible for whatever goes wrong and, therefore, they are the ones who get sacked even though so many other individuals and bodies have, through assignment of various roles, acquired the power to take or to indefinitely stall a decision. It is, therefore, necessary to identify all those, who, besides the Vice-Chancellors, directly or indirectly exercise real power in the universities, and having done this, to devise mechanisms to see that wherever they go wrong, their, and not the Vice-Chancellors, heads will roll.

Since this aspect of university administration is not the main focus of this paper, the questions relevant to it will have to be examined separately. Nonetheless, it is necessary to end this section by adding a footnote to the earlier proposition, that university autonomy, by stating that instead of trying to carry on with a present structure, with the power and responsibility concentrated in the Vice-Chancellor, it would be better to restructure the system and redefine the roles and responsibilities of all the dramatis-personae playing their parts in the university. In addition, it is also necessary to determine, after due examination, as to whether it is at all possible to run universities, etc. in a credible fashion, within the financial, administrative and political constraints imposed from outside.

III

Autonomy and accountability, which are the subject of this paper, are really two sides of the same coin. Any complex task of a continuing nature which involves the participation of different people at different places, requires the assignments of responsibilities, i e. the determination of who will do what, where, when, etc. and also the freedom to take the initiative to proceed with these within the overall framework of given objectives and constraints. Large industrial or commercial undertakings, multi-nationals and other enterprises in respect of which every step or situation cannot be predicted allow their regional boards and managers considerable freedom of action. Generally the degrees of interference from the higher authorities in the functioning of a lower formation is determined by the latter's record of performance. However, the view in private industry is that if higher authorities have to intervene too often to help out a particular unit either the system or the personnel or both should be changed or the viability of objectives should be re-examined with reference to the internal and external constraints inherent in the system.

Academic institutions such as Universities are highly complex organisations which are charged with a multiplicity of responsibilities. Some of which defy precise definition. While for some of these, inputs and outputs can be defined, others require flexible and innovative approaches in the development of physical, financial and human resources. Another complicating factor is that these institutions have to deal with a lot of extremely sensitive and volatile people who not only tend to, but who are also required to, question everything and everyone. They do not like the idea of being answerable to any one because, often quite rightly, they believe that they know best as what ought to be done to obtain certain results.

While recognising the above facts, it has also to be recognized that so long as universities are playing a role in the development of human resources and are operating on the basis of allocation of public funds. They cannot be left entirely to themselves. Acceptance of public funds has to go alongwith a framework of accountability delivered from either the basic purpose for which the University was established or the objective for which funds were voted or assigned by the Parliament, the State legislature or some other public body.

Moreover, it is inconceivable that no one should ask any questions from an organization made responsible for shaping the personalities, and equipping the minds of young people who will hold the country's future in their hands in the coming decades. The stakes are too high to leave the matter entirely in the hands of the universities.

It has already been observed earlier that the degree of overseeing intervention, the issuance of directives or the details in which performance is monitored depends largely upon an institution's record of accomplishments and failure. It has also been noted that when an institution shows a persistent inability to discharge its responsibilities and required too much supervision or intervention, its objectives, organisational set, personnel policies should be reviewed so that it can be overhauled and given a mandate and a management system which will enable it to function as a viable institution. It is time to take stock of what is going on in universities and on the basis of certain performance criteria decide as to what kind of intervention is required to improve the performance of the Higher Education System in India.

IV

Following from the view that autonomy is to be looked upon as a managerial concept in the context of achieving the objectives for which the university system should be held responsible, it seems essential that the views on the accountability of this system should be examined and a generally acceptable approach to it should be crystallised. In this connection, it is necessary to establish a broad consensus on what should be regarded as the minimal requirement of accountability vis-a-vis the university system. Apparently every university has to ensure that :

(i) it will admit students as per a pre-determined schedule, only on the basis of credible and objective criteria;

(ii) it will lay down and, from time to time, update syllabi and curricula keeping in view the general levels of competence of students at the entry point and the conceptual comprehension, methodological skills, and factual information which they are expected to acquire at the end of a course;

(iii) class and course work will proceed according to a given time table;

(iv) appraisal of the levels of achievement of students vis-a-vis the pre-requisites laid down in the syllabi, etc. would be undertaken well in time through processes which would demonstrably preclude favouritism and corruption;

(v) the grading awarded to examinees would be such as to command credibility among other institutions and employees;

(vi) an environment for learning would be created which would ensure that the general body of students would become actively involved with the pursuit of knowledge so that there would be very little 'wastage and stagnation;'

(vii) the composition of the staff and of the student body and the general environment would discourage inbreeding and parochialism and encourage a humanitarian reverence for life and environment and a scientific attitude to life and the mysteries of nature; and

(viii) adherence to reasonable norms of operational efficiency, professional encouragement, financial discipline, grievance redressal.

The above norms of accountability have not been formulated with a view either to prepare a comprehensive list or arrange these in an order of inter-se importance. It is meant merely to illustrate the kind of norms of institutional accountability which need to be evolved. This listing, however, has brought into sharp focus the crux of the whole issue of accountability. To draw up an appropriate list two basic questions will need attention. Firstly, it will have to be decided as to which sections of the community vis-a-vis whom accountability should be enforced and secondly, identification of all those functionaries, who in a university system, will share the burdens of accountability.

For the purpose of this paper, it will be adequate to pass from the question of accountability to that of autonomy after answering the question as to who are entitled to participate in determining, not only the various dimensions of accountability but also deciding the process, the periodicity and the follow-up consequences of the reckoning implied in this process. Apparently the tax payers, the parents, the socio-economic planners, educationists with a vision of the future, faculty and staff, the students and perhaps some others too will have to be involved, with the perceptions and concerns of some receiving greater weightage than the others.

V

Having referred to the areas and some other issues related to accountability, it appears necessary to start looking at various those pre-requisites of functional autonomy without which one cannot expect the universities to perform the tasks assigned to them. For instance, there is no justification for talking about good education, responsible behaviour or the pursuit of excellence to people, to whom, year after year, money is not provided to pay for the salaries and other perquisites of the employees, keep the masonary and plaster in good repair, the woodwork well painted, the furniture properly varnished, the water supply system in good functional order, kitchens capable of providing edible food at reasonable prices, the electric wiring and fittings safe against overloading, tripping and short circuiting, the lawn and flowerbeds well tended, the sports clubs and gymnasia appropriately provisioned and last but not the least, the libraries and the laboratories equipped adequately to support the syllabi and curricula. Everyone knows the financial requirements for the items listed above. It should be self-evident that it is the height of irresponsibility to start new institutions or demand the enlargement of either the faculty or the student body of an existing institution without meeting these requirements.

It seems as if almost everyone controlling universities, etc. is purposely keeping them starved of the minimal funds required even for routine functions just to ensure that Vice-Chancellors will come begging to them for what is due to them by rights. Tied to indices of labour rates and prices of relevant materials, there should be norms for allocation for maintenance of different facilities. Such a formula has been introduced in a few institutions and this has contributed considerably to the self-esteem and morale of the personnel of these bodies.

It is necessary that the items which are considered integral to the functioning of the universities, etc. should be decided by a process of free and frank interaction with the concerned bodies and authorities of the universities. However, it does seem desirable that this process of demarcation may set off by specifying certain areas in which room for autonomous action seems too obvious to require elaborate justification. As long as university administrators are held responsible for the maintenance of academic standards and discipline, these bodies will have to exercise final authority to administer the institutions on the basis of regulations formulated in the matter of :

(i) determining the number and methodology of admitting candidates to various courses;

(ii) retaining or dropping students from their rolls for misconduct or poor academic performance ;

(iii) recruitment, management and sacking of teaching and other staff;

(iv) administration of examinations, and for this purpose, making appointment of examiners, invigilators, etc.

(v) moderation of results and upkeep of standards.

The items in the above list can be suitably revised by people who are knowledgeable about the functioning of the university system. But that, though necessary, will not be adequate by itself. What is crucial to the proper functioning of the universities to enable them to acquire the characteristics of truly autonomous institution, is the establishment of a consensus between ministers, legislators, chancellors, bureaucrats and others that on certain issues, pertaining to the day to day functioning of the universities, no outsider will be able to interfere. On other issues involving grievance redressal, policy formulation, diversification or expansion of facilities, etc. outside intervention would take place through procedures which have been laid down in the Regulations. This will ensure that it will be possible to identify the decision-makers from within and without the university and hold them res-

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TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

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ponsible for the consequences of their decisions. One of the major problems today is that a great deal of interference is by proxy. Those who have financial, administrative or political clout do not issue an order under their own authority. They operate an extra-constitutional pressure to get what they want done by various university authorities against their will and better judgement. This results in the progressive loss of credibility of Vice-Chancellor after Vice-Chancellor as the people discover, and somehow they always discover, as to who pulls the strings from behind.

Having gone over the various issues pertaining to accountability and autonomy of universities, etc. it seems desirable to reiterate that the whole exercise will serve no purpose if the discussion of various issues continues to take place in the context of the present system which puts the Vice-Chancellors on unstable pedestals from which they keep falling like ninepins essentially because of inherent contradictions which have developed over the last few decades. It is futile to think that the clock can be turned back and universities can be made to function satisfactorily as administrative units under the monalithic control of Vice-Chancellors. They can operate at a reasonable level of stability only if effective measures are taken immediately to evolve within these institutions functional subsystems of accountability and autonomy which would enable various functionaries not only to take their own decisions but also take the consequences of their acts of omission and commission.

Under the inexorable compulsion of having to move from a monolithic to a pluralistic system, the culture and administrative structure of universities is going through a transitional phase. Not only Vice-Chancellors but a lot of other people are resisting this change. It is necessary that, to the extent this change appears to be inevitable, it should be accepted and those who understand the university system from inside should be pursuaded to lend their cooperation by contributing to the restructuring of the present system. If this process of administrative restructuring keeps on getting postponed, Vice-Chancellors will continue to fall victims to changed circumstances. It is necessary, therefore, that the academic community should be mobilized to participate actively in working out the modalities of changing the present system which will introduce a much larger measure of flexibility and the much needed dispersal of autonomy and accountability. ☐

PANJAB UNIVERSITY, CHANDIGARH

Department of Commerce & Business Management

Invites applications for admission to :

Master of Business Administration (MBA)-30 Seats

(Two Year Full-time Course) 22nd batch

COMMENCING JULY, 1989

Eligibility

A recognised Bachelor's or Post-graduate degree in any discipline Agriculture, Arts, Commerce, Engineering, Law, Science, Technology etc. with at least 50 per cent marks in the aggregate OR Chartered Accountant OR Cost and Works Accountant OR Company Secretary OR AMIE. Work experience will be an additional qualification.

Note : (a) Candidates appearing in FINAL DEGREE examination in April/May, 1989 or earlier are also eligible to apply.

(b) Merit Scholarships and limited financial assistance in deserving cases available.

(c) There is reservation of seats for Scheduled Caste (15%), Scheduled Tribe (7-1/2%) and Backward Class (5%) as per University regulations with concession of 5% marks in the aggregate; provided they satisfy the selection criteria. Seats are also reserved for Physically Handicapped (3%), on the basis of achievement in sports (5%) as per University norms, Military personnel (up-to 5%) as per University norms, for son/daughter/husband/wife/brother/sister of persons killed/incapacitatad in November 1984 riots and of persons killed/incapacitated in terrorist violence in Punjab and Chandigarh (2%); provided they satisfy the selection criteria.

(d) Those who have passed their last examination from a University other than Panjab University are required to submit Migration/Eligibility Certificate/s, if offered admission.

Admission Test

All eligible candidates will take a written test to be held at different centres in India on Sunday, March 5, 1989.

Applications

For application forms and relevant information, write to The Deputy Registrar, Department of Commerce and Business Management, Panjab University, Chandigarh-160 014 enclosing therewith a crossed Indian Postal Order/Bank Draft payable at Chandigarh for Rs. 80/- in favour of Registrar, Panjab University, Chandigarh and a self-addressed envelope (29 x 18 cms) bearing Rs. 5.00 stamps.

Requests for application forms received by post after January 16, 1988 will not be entertained. Application forms will also be available at the office of the department between 3.00 p.m. and 5 00 p.m on all working days upto **January 20, 1989.**

— CHEQUE OR MONEY ORDER OR CASH PAYMENT NOT ACCEPTED.

— TELEPHONIC ENQUIRIES WILL NOT BE ENTERTAINED.

LAST DATE FOR RECEIPT OF COMPLETED APPLICATIONS : **January 23, 1989**

MAKING THE SYSTEM WORK

C.R. Pillai*

Universities—Complex Organisations

Our Universities have grown into large organisations. The BHU, for example, has about 15000 students, 1500 teachers, 6000 other employees, and a total campus population of about 50000. The concerns of the BHU management cannot remain confined to excellence in teaching and research; it has to worry perhaps more about the supply of water and power on the campus. With the growth in their size, as also the addition of various new functions and responsibilities, the complexities in the managements of universities have increased manifold.

It has often been argued that we have a dual education system. This duality is represented by a small number of institutions known for their excellence on the one hand, and the mass education system which consists of the large universities and colleges which produce graduates, on the other. It is also argued that this duality is evident in their functioning. In almost every sphere, admission, programmes of teaching and research, holding examinations, etc., the performance of the elite institutions is satisfactory and indeed, commendable; there are not many disruptions which affect them. On the other hand, almost everything about the large universities and colleges is in disarray. In many cases, admissions are not made on time, academic sessions are disrupted, teaching time tables are seldom adhered to, examinations are delayed, and so on. There are also reports of mal-practices in admissions, appointments and examinations. It is this image—of the mass education system that pervades the higher education scene. The good performance of a small number of institutions is not visible enough to make any impact.

Universities and their Autonomy

It will be unrealistic to assume that our universities could become completely independent. Their funding for a long time will have to come from the Governments. Even if they are able to find out an alternate source of funding, they will only be substituting one kind of dependence for another. Surely, the agencies that provide funds would expect the universities to be accountable; there is no escape from this reality.

The strength of the autonomy of our universities will ultimately depend upon the value society attaches to independence in academic life. That some of our good institutions are performing well, and relatively free of a variety of external pressures establishes the fact that independence in academic life is respected. It is an acknowledgement of this respect that is reflected in the structure of self-governance that we have given to our universities. It is for the universities themselves to protect and strengthen this independence; no public institution universally perceived as ineffective and inefficient can legitimately claim protection by the society. It is worthwhile to note that in our country universities enjoy far greater institutional autonomy than universities in many other countries, including these in some European countries, where universities are coming under increasing pressures from their Governments.

The autonomy of a university is not the autonomy of its Vice-Chancellor. It is naive to assume that the responsibility of a Vice-Chancellor can protect a university from charges of corruption and inefficiency nor do the prestige and honour of the person holding the office of the Vice-Chancellor assure excellence in the performance of a university. It is true that extra-ordinary men had adorned the chairs of Vice-Chancellors, but it need not follow that all Vice-Chancellors are extra-ordinary men. The credibility of a University is damaged the most when the strongest charges of corruption and inefficiency come, not from outside, but from teachers of the university itself against the Vice-Chancellor and others.

Functions of Universities as Organisations

Universities perform several functions. Some of these are purely academic. But in order to perform these academic functions, the universities have to do several other things which most organisations also do. In judging the performance of a university, the record on both counts has to be taken into account. The impact or effectiveness of academic functions is not easily visible, but the performance of certain organisational functions make or mar reputations instantly (like handling of a trade union strike).

The Academic Functions

The main academic functions that the universities perform are teaching, research and ex-

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**Deputy Secretary, Department of Education, Ministry of Human Resource Development, Government of India, New Delhi.*

aminations. In terms of activities, these involve designing courses, determining their content, preparation of instructional materials, evolving new teaching and learning methodologies, holding classes, arranging examinations, providing for research, and so on. There are also several other functions like organisation of extension programmes and co-curricular activities. It must be said that in the performance of almost all these functions, our universities enjoy considerable freedom. The only limitation is that imposed by resources at its disposal, its freedom is not likely to be called in question.

It does not follow that performance of these functions is exclusively internal to the universities. On the other hand, in these areas, the universities are likely to benefit the most through process of interaction with external agencies. It is in this context that suggestions are often made for establishing institutional linkages, formal or informal consultative mechanisms and also involvement of the community. Unfortunately, there is no evidence to suggest that such interactive mechanisms are working in most of our universities. Universities are perhaps the most exposed among institutions. Unless this exposure leads to an informed appreciation of the strength and weaknesses of our universities, the popular perception of non-performance is only likely to persist. We must realise that without such interaction, universities will be left to function in isolation which will manifest in its worst form of inbreeding. If we have to break this isolation, we have to encourage greater openness in the functioning of our univerties. Perhaps, this could be achieved through efforts to foster and maintain :

—linkages with research institutions/laboratories/industry/business, etc.

—Course Advisory Committees or consultative groups consisting of experts/professionals/local business leaders and public men;

—greater involvement of the community, both as participants and beneficiaries.

It is only through sustained efforts in strengthening these interactive processes that the focus of performance of our universities can be shifted to academic matters. We should not allow our universities to be judged by their record in dealing with strikes or handling mobs.

The record of most of our universities in the performance of their academic responsibilities has not been too inspiring. The general atmosphere of shortage of resources and the increasing pressure of expansion have provided a convenient alibi for non-performance. Our universities must begin consistent and systematic efforts in reviewing the courses and programmes, in renewing them, in introducing innovations in course designs and production of materials, in providing multiple choices to students in the combination of courses, and in retraining teachers and other staff to meet the needs of modernisation. The universities must do all that they can to ensure that it is their performance in these areas that matters most in judging their effectiveness.

The Organisational Functions

As corporate bodies administrating large funds, personnel, property, endowments, etc. the universities have to perform a variety of house keeping functions. Besides, they award contracts for large construction programmes or purchase of costly equipment; they look after the civic amenities and security on the large residential campuses that most universities maintain. As recipients of large funds from the Governments, they have to pay considerable attention to financial administration involving budgeting, accounting, auditing and so on.

Almost all organisations, including Government, develop norms and standards to regulate their operations in these matters. As users of public funds, universities have not only to adhere to certain norms and standards, but must also make it appear that they do so. Autonomy in operations does not absolve any public institution from adherence to such norms and standards and universities are no exceptions. Indeed, all organisations evolve their own norms and adhere to them. Even if it is termed as a bureaucratic approach, there does not appear to be any escape from it. Autonomy cannot lead to anarchy.

The Central Functions

There are certain functions performed by universities which are crucial to their functioning. Performance of these functions demands a combination of academic judgement as well as organisational competence. These involve opening of departments, laboratories, colleges, etc. admission of students to various programmes of studies; and conducting examinations. All these are highly sensitive functions in which the universities come in direct touch with the public. These are also functions in the performance of which the dynamism of a university is put to the severest of tests.

(i) Establishment of Colleges and Institutions

The most distinguishing feature of the development of higher education in the last four decades has been its expansion. This pressure was felt the most at the first degree level and it was met by indiscriminately opening more colleges. A distressing aspect of this expansion was the total absence of any planning.

There was no concern for essential matters like who will provide the finances, who will maintain the college, who will teach, what will be taught, and so on. It has been simply a case of adding more of the same It is only now that the UGC has formulated some guidelines for granting affiliation to colleges by the universities. The CABE has also endorsed these guidelines. Our universities must now be able to resist all the pressures, even those coming from the State Governments. and insist that no new college will be granted affiliation unless establishment of new colleges forms part of an integrated plan for development of higher education in the State and that the conditions prescribed in the UGC's guidelines are fulfilled to the satisfaction of the university. Even in respect of proposals emanating from private managements, the universities should insist that they should first be integrated with the total development plans in the State before the universities consider them.

(ii) Admission of Students

The overall scene of admissions to our universities and colleges is one of considerable confusion, if not chaos. Most of the prestigious institutions have admission tests of long standing. They are accepted by the society, and their credibility is seldom questioned. Unfortunately, it has not been the case with the generality of our universities and colleges. Even though admissions to these institutions are not as competitive as to professional courses and programmes, there are all manner of complaints; at any rate, there is considerable dissatisfaction. The situation is that on an overall basis, the system can absorb almost all the aspirants. In fact, there are many colleges with very low enrolments. The problem really seems to be that there is pressure on admissions to certain prestigious institutions and the courses offered by them. Perhaps this pressure can be diffused to a larger number of institutions if the course structure is modified and the facility of chosing different units from different subjects to make the desired combination for a degree programme is permitted.

On the procedural aspects also, considerable improvement is possible. The kind of mad rush that we witness from one college to another, can perhaps be avoided if some coordinated planned mechanism is developed. This is a matter in which the initiative should come from individual universities.

(iii) Examinations

This is one area in which we have talked so much during the last quarter of a century, but done precious little. Even where some efforts were attempted, we have gradually gone back. It is not that there are no remedies to the ills that pervade the examination system. Most of the professional institutions and the small unitary universities do not attract the kind of grave charges against their examinations as those in the affiliating system do. What is possible in the smaller units should be possible also in the larger system. Perhaps the answer is that we must decentralise. The domination of the single final examination will have to be replaced by a large number of minor examinations spread throughout the course. Examinations should be designed for each unit of the course, and held at regular intervals during the entire duration of the course. Students should have the freedom to offer themselves for such examinations according to the pace of their progress in studies subject of course, to the limitation of the total duration of the programme. Such examinations, if conducted at the college levels can ensure greater openness as well. It will remove a great deal of mistrust and suspicions by giving students opportunities to compare their own performance with those of others.

Such an approach will not only decentralise examinations but also promote the efforts at redesigning of courses comprehensively. Our education system cannot escape this responsibility. We should make a beginning here and now.

Resources for Higher Education

The resources made available for higher education have never been adequate. There is no possibility that the situation will change for the better in the foreseeable future. This is not our experience alone. Universities even in the developed countries face critical shortages in resources. There are reports of Governments cutting back on grants and universities retrenching their staff.

There is no alternative to improving the effectiveness of what is already available. In fact, we should now begin thinking of radical changes in the processes of allocation of resources. Some possibilities that suggest themselves are :

(a) The present practice of incremental allocations for every new programme or project should be reviewed. Allocations for basic infrastructure like space, equipment, additional staff, library resources, etc. need not be provided to every university for every programme. The allocation for these purposes should be need-based. In the case of well established universities, sanction of projects should be related to the availability of basic infrastructure. This would imply a differential approach to funding procedures. But it might be worthwhile trying it.

(b) The present approach to resource allocation is fragmented. There are several committees which allocate resources for programmes assigned to them. There is little coordination among them. Further, these allocations are almost always adhoc. Mechanisms have to be developed for an integrated approach to resource allocation processes.

(c) The incremental approach in respect of staff positions has escalated the maintenance expenditure dramatically. It also leads to a situation of gross under-employment and low productivity. We must stop recruitment of new staff for every new activity. We should instead encourage retaining of available manpower and their redeployment in teaching as well as in other areas.

Conclusion

The message of 'making the system work' is assentially to improve the efficiency and effectiveness of our universities and colleges. These improvements are possible only if several conditions are fulfilled. Some of them are external to the education system; but many are within the competence of universities and colleges.

Effectiveness and efficiency are functions of discipline. Discipline in this case has to be understood not in terms of a command-control structure, but in terms of different components that make the system being ordered in an organic relationship to ensure greater productivity, creativity and orderliness in operations. The following are some thoughts for translating this message into a blue-print for action :

(i) Every university in the country must prepare a long term perspective plan for its growth and development. This perspective must set out very clearly what it wants to achieve during this period, the directions in which its own development will be guided and the strategy which it wishes to adopt for the fulfilment of the objectives so spelt out.

(ii) The long term perspective must also indicate, in broad terms, the resource mobilization that the university envisages for its perspective plan. It is no use preparing plans without assessing the resources that might be available. Even if the additional resources have to come through grants from State Governments or the UGC, an attempt should be made to project these grants on the basis of past experience.

(iii) The perspective plans so framed should be subject to constant monitoring, regular assessment and midcourse corrections. It might also involve addition of objectives, or deletion of some projected earlier.

(iv) Concerted efforts will have to be made to project the outcome of the academic efforts of our universities in terms of new courses designed, materials produced, new teaching-learning methodologies evolved, etc. Unless the focus shifts to academic efforts, the performance of universities is likely to be judged on non-academic considerations.

(v) It is important that a new work ethos and a work culture should emerge in our universities. There has to be considerably more openness in all areas of operations. Every effort will have to be made to inform the students, their parents and the public about what every university does and what can be expected from it.

(vi) Communication within the universities is also equally important. For instance, the annual budget of the university when it is finalised should be a document that is available to everybody. It will help everyone know what can be expected in terms of projects, programmes, contingencies, and so on. It will also help faculties, departments and other units to process sanctions expeditiously and openly.

(vii) A practice could be developed by which decisions taken by various bodies of the universities, the Executive Council, the Academic Council, Faculties, etc are given wide publicity. Ordinarily, no decision should be withheld from being published unless it is of a confidential nature.

(viii) Formulation of a time-frame for various operations of the universities and its adherence are very necessary. As public institutions, universities deal with students, parents and a large number of members of the public. The periods of admission, programmes of teaching, vacations and holidays, preparation time, the period of examinations, the declaration of results, etc. are the most important events in which the students and the public are interested. It should be the endeavour of every university to prapare such calendar of events and make efforts to adhere to it. If the programmes and activities of the universities are properly planned, there is no reason why such calendars cannot be prepared. Afterall, the efficiency of an organisation will be judged by comparing what it planned to do and what it did. Our universities should not shy away from being judged on this count as well. ☐

SUCCESSFUL INNOVATION

Describing the present as an "Age of Entrepreneurs", Shri S.L. Kirloskar, a leading industrialist, noted the emergence of women entrepreneurs and called on them to be self-reliant and strive for quality. Excerpts from his convocation address delivered on November 26, 1988 at SNDT Women's University follow :

It is a great honour and indeed a privilege to be invited to deliver the convocation address of the poineer Women's University in India and particularly the opportunity offered to me to pay homage to the founder Maharshi Dr. Dhondo Keshav Karve, with whom I was intimately associated and who having studied the project of Women's University in Japan, realising the objectives and philosophy of that institution founded this university seventy two years ago, without waiting for recognition from the Government and with only four students on roll. I also keep on record my appreciation for Sir Vithaldas Thackersey's donation given in 1920 which put this university on a firm financial footing

I am glad that today the university has on its roll 30,000 students in the formal as well as non-formal streams, 29 colleges, 30 university departments, 10 faculties and 3 campuses.

I am really very glad that the main thrust of this University is Research on Women's Studies, Research in Foods and Nutrition. Technical Courses and Para-Medical Courses, Continuing Adult Education, Legal Aid Cell, Open University Programmes, Population Education and Management Development Programmes for Women Entrepreneurs. I am particularly happy to know that in collaboration with the Ministry of Human Resource Development and USAID (US Agency for International Development), the Department of Education-Management of this university conducted the first such programme for women entrepreneurs in April/May 1987, and currently another Programme of Management Development for Women Entrepreneurs has been recently concluded in collaboration with the Association of Commonwealth Universities, in October/November 1988. These steps taken by SNDT University are not only appropriate but are keeping in line with the needs of the time. I would like to emphasize that the main thrust should be on Management Development and Job Oriented Courses.

It is a happy co-incidence that with the coming up of new 'Education Policy, newer areas of technological advances newer dimensions in the field of management, where women can contribute to the maximum, have been considered by this university for Human Resource Development, both in the university system and also in the open system. I particularly commend this university's lead in Open University educational activities.

Need for Self-Reliance

The emerging social climate requires every individual to be completely self-reliant. In a country which is fast developing on its own, no woman can afford to be dependent on others financially.

Fortunately, self-reliance today is a clear possibility for more and more women. Financial institutions and banks offer a variety of schemes especially for women. Government training and financing schemes provide women facilities to run small enterprises and earn without leaving their families. Today small scale and cottage industries offer unprecedented opportunities to women. In many states, education is free for women and opportunities go a-begging for those who are adventurous and enterprising.

Emergence of Women Entrepreneurs

Amongst all these opportunities, is the fast emerging trend of women as entrepreneurs. Women have now begun to enter the competitive world of business. Women have become more independent, achievement-oriented and career-minded. They want to enjoy a sense of achievement and get recognition from society.

What is most interesting to note is that the entrepreneurship of women is not just confined to the traditional fields such as Education, Nursing, Beauty Parlours, Boutiques, etc., but extends into areas such as Telecommunications, Electronics, Computer Sciences and the service sectors. And I found that most of them are doing well. I hope these examples will be inspiring for many others, and particularly the upcoming graduates.

Attributes of a Successful Innovation

A few points need to be kept in mind for any aspiring Entrepreneur :

— Purposeful, systematic innovation begins with the analysis of the opportunities.

— Innovation is both conceptual and perceptual. Successful innovators work out analytically what the innovation has to satisfy an opportunity.

- To be effective, an innovation should be simple and immediately understood by the vast majority of "Ordinary" human beings. Every innovation that creates new uses and new markets should be directed towards a specific clear, designed application.
- Innovations should always be for the present and for the future keeping in view the needs of the time.
- A successful innovation aims at leadership. It need not necessarily become 'Big Business' but the aim at leadership should be present from the beginning, otherwise, it is unlikely to be capable of being innovative enough and to establish itself.
- Finally, innovation requires a great amount of work, and innovators need to build on their strengths.

A successful innovation depends upon three things—Initiative, Commitment and Action.

Difficulties Faced

For a married women, working outside the home, is a fine balancing act between home and work. All such women agree that supportive husbands play a very important role in their success. The balancing act becomes so much easier.

I feel that the achievements of the first generation of women entrepreneurs is particularly meaningful and important. They have not only to manage two fronts—business and family, but they have also to be instrumental in breaking many mental barriers against women working outside the home. Such a task involves making a large number of sacrifices, like not being able to spend a lot of time with the family and children and having to depend on outside help, to look after them. It also involves developing a new personality to brush aside snubs and jeers faced in day to day work.

Need for Social Change

Out of the problems faced by women, only time can solve some. For example mental barriers. These can only be broken over a period of time. Perhaps the next generation will have an easier time.

However, positive steps can be undertaken to solve one major problem, and that is of childcare. Creches for children under the school going age are a tremendous asset to the working women. One should not depend on the joint family system to look after the children. Nuclear families are generally the norm in urban areas today. It is most unfair to put a working woman in a situation where she has to choose between her career and her family. I want to emphasize that we all must encourage an environment which nurses women entrepreneurs.

Entrepreneurs Need to be Groomed

The concept that entrepreneurs are born is fast changing, this has been established in many advanced and developing countries. There are many ways of nursing entrepreneurship-train, groom and motivate the 'Employee Class' to convert them into an 'Employer Class'. It is possible to inculcate entrepreneurial attributes, leadership skills and managerial orientations in women. Entrepreneurship can be systematically and deliberately propagated among those who are identified and ascertained to have the latent disposition and potential for this This assumes particular importance when considering the changes planned by developing countries.

The most critical vehicle for the development of entrepreneurship is the educational system. Entrepreneurship should be inculcated right from the school level. Entrepreneurial interest and awareness must be generated among children and also stimulate within them a disposition towards entrepreneurship. Tertiary level education also needs to respond to the development imperative. Universities and colleges must have specifically structured courses capable of producing graduates with the skills, knowledge and values to start as entrepreneurs, entrepreneurial managers or entrepreneurial administrators. I understand that such poineering restructured courses in entrepreneurship have been started at Nasik College under the leadership of Prin. Dr. M.S. Gosavi with success. I commend this to all concerned.

Entrepreneurship can also be propagated through short-term trading programmes, which have been formulated and implemented in many countries. Training programmes must be formulated in such a way that they really match the type and level of entrepreneurial moves to be achieved. I am glad this university has taken a lead in this regard.

Achieving Excellence Through Quality

The success of any management lies in achieving excellence and to me, the only gateway for achieving excellence, is through quality. Quality is everywhere : it has to be a culture of our society : a way of life, commitment to the systematic practice of ensuring quality is the hub of all the high quality and trouble-free operations, while delivering goods and services. This is true, whether it is public sector or private sector, small or big enterprise, whether educational institutions or airlines or Public Works Dept. constructing roads or for any service organisations, as such for the society.

We want to expose for managers at all levels, the range of knowledge, skills, and attributes, essential for 'Responsible Quality Competence'. The quality and scale of management available to business, government and other organisations, as I see, will probably be much different in the next two decades as the current state of management has been different, from that of 1960's. I feel, leadership of tomorrow can only sustain on 'Competition' and can only grow on achieving excellence through 'Quality'. Higher education for women can be oriented to achieve this end.

I want to stress quality as a strong weapon for marketing. I always say, that the aim of any business is, to earn profit, by meeting the needs of the customers, through quality of goods and services. Thus by maintaining quality standards, the marketing is ensured. It is not the first order, but the repeat orders, that is important. Hence my emphasis on quality is for better marketability and sustaining growth with profitability. Instead of controlling prices we can control quality : meaning thereby, arrest bad quality. I want to stress that quality can create customers, attain customer-satisfaction and thereby, enhance marketing.

In achieving excellence, top management has to have constant thinking about these. In creating and building wealth-producing organisations, the essence is "Entrepreneurship"; I see before my eyes right now, the "Age of Entrepreneurs".

I firmly believe that no field is unsuitable for women. In fact women by nature are endowed with certain qualities which will make them more suited for different fields including technology and hardwares, along with education, training, and software. But for this, the pre-requisite is women must come up and decide to compete with conviction and courage. This decision must be on their own, that they should firmly believe and act upon. The role of the university is to develop a total integrated personality for women to enable them to accept the challenges of the present time. This will go a long way in helping the nation to draw upon human resources for various jobs. The independent status for women is well accepted but success depends upon accepting challenges and converting challenges into opportunities.

I have seen the process of industrialisation before and after independence, and during my last sixty years of experience, in all the speeches and writings, I have strived to carry only one message, "WORK HARD AND WORK WITH DEDICATION". Try to attain the highest level of excellence in whatever you undertake to do in all walks in life. Look at all problems and difficulties, as so many challenges and try to face them with optimism and courage. I look forward to a day where this university expeditiously takes the steps for management development for women keeping in view the need of the time.

Nehru Memorial Museum & Library

Fellowship Programme In Modern History And The Social Sciences

The Nehru Memorial Museum and Library offers fellowships in the range Rs. 3700-5700 and Rs. 2200-5300 plus allowances at Central Govt. rates and contingency grant of Rs. 7,500/- and Rs. 5,000/p.a. respectively for research in 'Modern Indian History and Contemporary Studies'. Scholars applying for Fellowships may work on the nationalist movement, or on Modern Indian History, or on Contemporary Indian Society. The Fellowships will be for three years, renewable for another two years. The Fellowships are open to historians and social scientists with good academic record and research experience, preferably already in possession of a Ph.D. degree.

The Nehru Memorial Museum and Library reserves the right of publication of the research papers and monographs prepared by the Fellows during the tenure of fellowship. The Fellows will be based in Delhi.

Those who wish to be considered for fellowships should send a note not exceeding 1,000 words on the project proposed to be undetaken and details of their qualifications along with the following information to the Director, Nehru Memorial Museum and Library, Teen Murti House, New Delhi-110011 latest by **31.1.1989**: (i) Name (ii) address (iii) date of birth (iv) academic record from High School examination (v) details of post-graduate work and list of publications with copies (vi) details of how employed so far, and (vii) names and addresses of two referees. Employed scholars should furnish a certificate from the employer that, if selected, they will be released to avail of the fellowships.

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Indian School of Mines

DHANBAD-826004

(A Deemed University under UGC Act)

ADMISSION NOTIFICATION—1989

An all India Entrance Examination will be held at a large number of Centres throughout India on **5th and 6th May, 1989** (in supersession of dates notified earlier) for admission to the following B. Tech and M Sc. (Tech.) programmes offered by the School.

Programmes	**Eligibility**
(A) 4-Year B. Tech. 1. Mining Engineering 2. Opencast Mining 3. Mining Machinery 4. Petroleum Engineering 5. Mineral Engineering	Pass in I Sc or two year PUC or class XII of CBSE or + 2 of 10 + 2 pattern or equivalent exam with Physics, Chemistry, Mathematics and English. Maximum age limit 22 yrs except for Petroleum Engg. which is 21 years.
(B) 3-Year M.Sc. Tech. 1. Applied Geology	Pass in B.Sc (3-Yr course)/(B.Sc 2-Year + 1-Year Bridge course) of 10+2+3 pattern with Geology as Major/Hons. subject and any two subjects out of Physics, Chemistry and Mathematics.
2. Applied Geophysics	Pass in B.Sc (3-Yr course)/(B.Sc 2-Yr + 1-Yr Bridge course) of 10+2+3 pattern with Physics as Major/Hons. subject and Mathematics as subsidiary subject and also any one subject out of Chemistry, Geology, Statistics, Electronics, Computer Science. Maximum age limit 24 yrs.
(C) 3-Year Condensed B. Tech. 1. Mining Engineering 2. Mining Machinery 3. Mineral Engineering	Diploma in Mining or in Mining and Mine Surveying. Diploma in Mech./Elect. Engg. No Age limit, Diploma in Mining/Mineral Engg./Chem. Engg./Elec./Mech. Engg.
(D) Make-up admisstion 2nd year of B.Tech. 1. Mining Engineering 2. Mining Machinery 3. Mineral Engineering	(1) B.Sc. (2 year course) with Physics, Chemistry and Mathematics. Or (2) Pass in Institution of Enggs studentship Exam with one year's industrial experienee in relevant field. Maximum age limit 23 yrs.
(E) Make-up admission 3-Year of B. Tech. : 1. Mining Engineering 2. Mining Machinery	Diploma in Mech/Elec/Mining Engg with pass in Sec. A of AMIE and with one year's industrial experience in relevant field. No age limit.

Details regarding all other informations are available in the Memorandum of Information (Prospectus) available along with the application form from the ISM Cash Counter in person or by post from **1st January, 1989 to 18 February, 1989** from the office of Registrar, Indian School of Mines, Dhanbad-826004, on payment of Rupees Ten only in the form of Crossed Indian Postal Order payable at ISM Post Office. **Bank Draft/Money Order will not be accepted.** Request for applications must clarify the number of the course viz. (A), (B), (C), (D) OR (E) which must be superscribed on the envelope.

Reservation : 15% and 7.5% seats are reserved for SC/ST candidates in all courses. A few seats in 4-year B.Tech programme and 3-year M.Sc Tech programme are reserved also for girls, good sportsmen and sons/wards of defence personnel.

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* **Eligibility Criteria :** Candidates with or without any educational qualifications are eligible to appear at Eligibility Test for admission into B.A./B.Com. 3 year Degree Course provided they complete 21 years of age by 1st July, 1989.

* **Date, Venue and Media of Eligibility Test :** The Test will be conducted on the 12th March, 1989 (Sunday) in English and Telugu media at all the study centres of Andhra Pradesh Open University which are located in the Twin Cities of Hyderabad & Secunderabad and in all the Districts of Andhra Pradesh. It may be conducted outside the State also if a considerable number of candidates apply from a particular place outside the State.

* **How to Obtain the Application Form :**

(a) **By Post :** You can obtain the application form and prospectus by Registered post from the office of the Controller of Examinations, A.P. Open University, 8-3-952/10/2/1, Srinagar Colony Road, Panjagutta, Hyderabad-500 016 by sending a crossed demand draft/postal order for Rs. 15/- drawn in favour of the Registrar, A.P. Open University along with the requisition letter.

(b) **In Person :** You can obtain the application form & Prospectus in person by submitting a crossed Demand Draft/Indian Postal Order for Rs. 5/- drawn in favour of Registrar, A.P. Open University payable at Hyderabad from the office of the Controllor of Examinations at the address mentioned above or from the office of the Co-Ordinator of any of the following study centres of the University in Andhro Pradesh.

* **District Study Centres :** (1) Adilabad Govt. Deg. College. (2) Alair-Govt. Jr. College. (3) Ananthapur-Govt. Deg. College. (4) Banswada Govt. Jr. College. (5) Chittor-P.V.K.N. Govt. Deg. College. (6) Cuddapah-Govt. Deg. College for Men. (7) Eluru-Sri. C R. Reddy College. (8) Godavarikhani-Govt. Jr. College. (9) Guntur-J.K.C. College. (10) Hindupur-S.D.G.S. College. (11) Kakinada-P.R. Govt, College. (12) Karimnagar-S.R.R. Govt. Deg. College. (13) Kavali-Jawahar Bharati College. (14) Khammam-S.R. & B.G.N.R. Govt. College. and Govt. Deg. College. (15) Kothagudem-K.Y.K.R.Y. & B.N. Goud's Govt. Jr. College. (16) Kuppam-M.F.C. Govt. Jr. College. (17) Kurnool-Silver Jubilees Govt. College. (18) Mahabubnagar-M.V.S. Arts & Science College. (19) Machilipatnam-Andhra Jateeya Kalasala. (20) Martur-Govt. Jr, College. (21) Mulugu-Govt, Jr. College. (22) Nalgonda-Nagarjuna Govt. College. (23) Nellore-Sri. Sarvodaya College (24) Nizamabad-Girraj Govt. College. (25) Ongole-C.S.R. Sarma College. (26) Peddapally-Govt. Jr. College. (27) Pitapuram-R.R.B.H.R. Govt. Jr. College. (28) Polavaram-Govt. Jr. College. (29) Rajahmundry- Govt. Deg. College. (30) Sangareddy-Tara Govt Deg. College. (31) Satyavedu-Govt. Jr. College. (32) Siddipet-Govt. Jr. Gollege. (33) Shadnagar-Govt. Jr. College. (34) Sirpurkagaz Nagar-Govt. Jr. College. (35) Srikakulam-Govt. Deg. College. (36) Tirupathi-S.V. Arts College. (37) Vijayawada-P.B. Siddartha College. (38) Vikarabad-S.A.P. Arts & Science College. (39) Visakhapatnam-Dr. V.S. Krishna-Govt. College. (40) Vijayanalgaram-Maharaj College. (41) Warangal-Arts & Science College (Kakatiya University Campus, Subedari) (42) Yelmanchili-Govt. Jr. College.

* **Twin Cities Study Centres : Hyderabad :** (1) Govt. City College, (Near High Court). (2) Pragati Mahavidyalaya, Hanumantekdi. (3) A.V. College, Domalguda. (4) Govt. Deg. College for Women, Begumpet. (5) New Govt. Deg. College, Khairatabad. (6) Govt. Jr. College, Kachiguda. (7) Govt. Jr. College, Alia. (8) Govt. Jr. College for Boy's. Nampally. (9) Govt. Jr. College, Old Malakpet. **Secunderabad :** (10) Sardar Patel College, Padmaraonagar. (11) D.B.P.M. Deg. College,. ('Key's High School Premises). (12) Rly. Deg. College, Lalaguda. (13) Govt. Jr. College, S.P. Road.

* **Commencement of Sales of the Eligibility Test Application Forms :** 5th, December, 1988

* **Last Date for Sale of the Application Forms :** 3rd January, 1989.

* **Last Date for Submission for Filled-In Application Forms :** 10th January, 1989.

* **How to Apply :** You have to fill in the application form and submit it to the Controller of Examinations, A.P. Open University, 8-3-952/10/2/1, Srinagar Colony Road, Panjagutta, Hyderabad-16, in person or may be sent by Registered post so as to reach him on or before **10th January, 1989.**

* **Note :** DDs/IPOs obtained prior to notification date (5th Dec.' 88) are not accepted. Money order/cheque/cash payment will also be not accepted.

* **Direct Admission to B.A./B.Com. /B.Sc. Degree Courses :** Candidates who have passed the Intermediate Examination conducted by the Board of Intermediate, Andhra Pradesh or any examination equivalent thereto are eligible for direct admission to the degree courses and are not required to appear at the eligibility test. A separate notification will be issued for such candidates sometime in the month of **April/May, 1989.**

REGISTRAR

DEVI AHILYA VISHWAVIDYALAYA, INDORE

M.B.A. **M.C.A.**

ADMISSION

Applications are invited on prescribed form for admission to July 1989 session :

M.B.A.	(Full-Time) Two Years
M.B.A.	(Part-Time) Three Years
D.M.M.	(Diploma in Marketing Management : Part-Time) One Year
M.C.A.	(Master of Computer Application : Full-Time) Three Year

ELIGIBILITY

M.B.A. (Full-Time) : Atleast Second Class Graduate in any discipline from a recognised University.

M.B.A. (Part-Time)
D.M.M. } As above and two years Full Time executive experience after graduation.

M.C.A. : Graduate in any discipline with at least 55% marks in aggregate and Mathematics equivalent of B.Sc. I of this University.

WRITTEN TEST : First week of February 1989.

APPLICATION FORMS : Can be obtained by sending Rs. 20 by Demand Draft in favour of Registrar, D.A.V.V., Indore and self-addressed envelope (18x24 cm.) with stamp of Rs. 4 . 50/- affixed, from the following :

For M.B.A. & D.M.M. : Director, Institute of Management Studies, Devi Ahilya Vishwa Vidyalaya, Indore

For M.C.A. : Head, Computer Centre, Devi Ahilya Vishwa Vidyalaya, Khandwa Road, Indore.

Candidates appearing in Final Year of Degree Exam. can apply for M.B.A. (Full-Time) and M.C.A. A candidate can apply for both M.B.A. (Part-Time) and D.M.M. While asking for application form, specify the course for which you want to apply.

SCHOLARSHIPS

M.B.A. (Full-Time) : Most likely to be provided as Company Management trainees (half-time) for two years with stipend of Rs. 700.

M.C.A. : Scholarship Rs. 400 in final year subject to 60% Marks in I and II year.

LAST DATE OF RECEIPT OF ALL APPLICATIONS DULY COMPLETED , JAN. 2, 1989

REGISTRAR

UNIVERSITY ADMINISTRATION

After inaugurating the Administrative Building of the University of Hyderabad on November 15, 1988, Prof. K.S. Murty, Vice-Chairman, UGC gave his personal views on university administration. Given below are some of the important points made by him in the speech.

I. The function this afternoon may naturally turn one's mind to University Administration. In 1971 in an article I published I put forward the view that University Administration should have to be different in its methods from that of Public Administration and Business Administration, because of the aims and purposes of higher education, the qualifications and psychology of scholars and scientists working in them and the histories and environments of institutions of higher learning. Now after 17 years my old apercu is further strengthened. This means a University cannot and ought not to be run in the way of government secretariat/department or a private manufacturing/commercial concern is run. It follows that universities as well as organisations established for the promotion and coordination of higher education and for the determination and maintenance of standards in institutions devoted to it, would do better than : (1) Copying the management models obtaining in government, industry or commerce, and (2) invoking the expertise of specialists whose knowledge is only that of management techniques in these latter fields.

It is important to note that so eminent an authority as Peter F. Drucker predicts that "the typical large business 20 years hence" will "bear little resemblance to the manufacturing company of 1950s", but will be more likely to resemble organisations like : the hospital, the university, and the symphony orchestra". What are the characteristics of these ? They are, Drucker rightly points out, "Knowledge-based, composed largely of specialists who direct and discipline their own performance through organised feedback". (*Harvard Business Review*, Jan-Feb. 1988). The university is an "information-based organisation"; and technology, need for specialised knowledge and economics are driving corporations in the developed world also to become like that. In such a situation it would be regressive for universities and any organisation established to promote and coordinate university education to pattern themselves after non-information-based organisations or obtain guidance from those whose experience is limited to them.

II. Based on what is or has recently happened in a couple of states, the cry of university autonomy in danger has been raised. This is justified provided it is understood that university autonomy should not mean just autonomy for the Vice-Chancellor and Syndicate/Executive Council. Unless the freedom to teach, learn and investigate has percolated to the faculty, the department and the individual scholar or scientist, there is no real university autonomy, This is not so in most of our universities.

"Freedom within the law to question and test received wisdom, and to put forward new ideas and controversial or unpopular opinions, without placing themselves in jeopardy of losing their jobs or privileges they may have at their institutions" (British Education Reform Act 1988, Pt. IV, 202) must be ensured to academic staff. This is one aspect of academic freedom. If and when governments or bodies which have the power to allocate and disburse grants to universities impose on the latter uniform courses, curricula and syllabi, that is an infringement of institutional freedom. If there can be such ideal uniform things, there need not be different universities; a single university for the whole country as in Napoleonic France will be better. This only means that while diversity and innovations should be allowed and encouraged, determination, maintenance and coordination of standards also should be done by organisations established for allocation and disbursement of grants.

III. So far, in our country the task of promoting and coordinating university education in a planned and systematic way and determining standards in universities has not been a complete success. Among others, some of the reasons are : Governments have quite often established universities as well as colleges without first obtaining impartial expert advice. Universities have not fulfilled the necessary requirements. Hardly ever have weak or substandard university departments been inspected, followed by a clear recommendation regarding the action to be taken to improve them; and even when guidelines, recommendations or suggestions were made, non-compliance of them by a university has not resulted in withholding of grants from it. In turn, affiliated colleges have not been inspected and advised, ensuring that advice is followed in a rigorous way. In a 'soft' state that India is, it is difficult for governments or organisations to take hard decisions and implement them.

IV. The situation in the sphere of higher education can be improved only if as in Britain (Education Reform Act 1988) it is decided to rationalise and streamline it. For this, some institutions/departments may have to be closed or merged with others, performance indicators devised and failure to perform up to the mark drastically dealt with, rules on granting tenure tightened, and grants made subject to terms and conditions thought fit by the funding agency, with their utilisation closely monitored by it. But it would be a grave mistake if anyone thinks I am making a plea for abolishing the UGC as the British have decided to do, or for going in for Conservatism, introducing a greater number of industrialists and businessmen into university bodies and their management techniques into university administration.

Our universities ought to be made to function in accordance with our secular, socialist, democratic and republican ideals. Our ideal university should be what was envisioned by Jawaharlal Nehru and C.D. Deshmukh, a great Chaiman of UGC. □

Workshop on Examination Reforms at Bharathidasan Varsity

The Curriculum Development Cell, Bharathidasan University, organised a three-day Workshop on "Examination Reforms" from 17th to 19th November, 1988 at Tiruchirapalli. The chief objectives of the Workshop were to familiarise the teachers with the evaluation procedures and to discuss the minimum Examination Reforms that the Universities could contemplate on.

Delivering the keynote address, Dr. G Rangaswamy, former Vice-Chancellor, Tamilnadu Agricultural University, Coimbatore observed that if anything was wrong with our academic standards, it was because of our defective examination system. While stressing the need for contemplating on certain minimum Examination Reforms at the tertiary level, he suggested that the syllabus for each paper could be well demarcated into four or five viable units so that questions might be asked from each unit without allowing the candidates to omit any section. He argued that continuous internal assessment would be an effective component, in evaluating the students' overall achievement.

Theme papers presented at the Workshop included (1) Test Construction to Evaluate Students Achievement, (2) Continuous Internal Assessment, (3) Assessment of Laboratory Performance, and (4), Marking, Grading, Scaling and Moderation.

At the Valedictory function, Dr. S. Muthukumaran, Vice-Chancellor, assured the participants that the recommendations of the Workshop would be given due consideration by the Academic bodies of the University. He appealed to the participants to consider their responsibilities to the welfare of the students' community. He pointed out that the growth and development of every individual, by and large, depended on the growth of his institution and therefore each one should give serious thought as to how he could contribute to the growth and welfare of his institution.

After three days of detailed deliberations, some of the important recommendations that emerged were :

(1) Instructional objectives for each paper of the course are to be prepared and incorporated in the curriculum.

(2) The syllabus for each paper is to be restructured and organised into five or six viable units. The time allotted for teaching unit may also be specified. Reference books suitable for each unit shall be clearly indicated.

(3) A table of specifications for each paper of the examination has to be prepared and included as an integral part of the curriculum to guide question paper setting. This table shall include (1) Weightage assigned to each unit of the curriculum for the paper; and (2) Weightage assigned to various abilities to be tested.

(4) The question paper for each theory subject shall consider of three parts as indicated below :

Part-A : Short answer questions each carrying 2 marks. 15 to be answered with choice (30 marks).

Part-B : Medium answer questions each carrying 5 marks.

5 to be answered With internal choice (25 marks).

Part-C : Long answer structured essay type questions each carrying 15 marks. The marks assigned for each of the sub-divisions in an essay question shall be specified. Of these 3 to be answered with internal choice one of which may be compulsory (45 marks).

(5) Every question paper setter shall be required to prepare a suitable scheme of valuation for and solution(s) to problem(s) in each paper set by him.

(6) All question papers shall be scrutinised and processed by a duly appointed board of paper setters. The board shall also consider and finalise the scheme of valuation received from the setters.

(7) For the implementation of Continuous Internal Assessment (CIA) at the UG level, the tools to be used shall be (a) written tests in case of theory subjects, performance tests for laboratory work; and (b) attendance.

(8) Wherever the CIA is in vogue, the marksheets shall contain the following particulars : (a) marks secured in IA (Internal Assessment);(b) mean of the IA marks for that subject in the concerned institution; (c) marks secured in University Examinations (UE); (d) mean of the UE marks for that subject in the University.

(9) The raw marks and the corresponding percentile for each paper shall be indicated in the marksheet.

(10) Wherever CIA is in vogue, an Appeals Committee shall be constituted in each college; further the implementation of CIA in various institutions shall be monitored by the University.

(11) The existing marking system shall be continued in preference to the proposed grading system.

(12) All results shall be finalised only by a duly appointed Board of Examiners. The Board shall also be empowered to do justice to all border line cases whether it is a Pass/Fail border (not more than 5%), II class/III class or I class/II class border (not more than 0.9%).

West Bengal Varsities to seek Corporate Financing

The West Bengal government is reported to be considering the possibility of corporate financing for specific academic courses in universities in the state. It has, therefore, asked universities to seek collaborations from companies for courses like business management. This kind of arrangement has been successfully attempted in Bombay and in the Indian Institutes of Management.

It is reported that of the state's annual higher education budget of Rs. 97 crores, only about 20 per cent is spent on R and D.

Corporate funds, while helping the universities to tone up their R and D activities, would afford opportunities to the contributors to select persons with promise for their organizations. Good understanding between the universities and companies can also eliminate the mushrooming of non-registered institutions, which are minting money, by running business management courses.

It is also reported that the state government has asked the universities to consult it before sending their Eighth Plan projects to UGC for grants as there was no point in first getting the projects sanctioned by UGC and then coming to the state for the matching grants, and finding them stalled because of lack of funds.

Applied research in science is also sponsored in universities abroad. "Science parks" are examples of meaningful collaboration between universities and corporate bodies. Indian Institutes of Technology (IITs) have, to a certain extent, succeeded in working out collaboration arrangements for their projects. That is an example which the West Bengal government would like universities in the state to follow, it is said.

Education Data Computerised in Andhra Pradesh

An All-India Educational Survey conducted all over the country reveals that Andhra Pradesh has become the first State in the country to fully computerise data relating to available educational facilities in the State. Information relating to 54,000 schools in 27,000 villages in all the 23 districts of the State has been computerised under a project taken up by the Government-owned Andhra Pradesh Technology Services Limited (APTS).

As many as 157 tables were generated, providing vital information for educational planning at both the State and Central level. This information will help assess the present position of educational facilities in terms of coverage of school going population, enrolment in general and boys and girls belonging to the Scheduled Castes and Tribes, in particular.

The data base would also help assess availability of physical facilities like school buildings, playgrounds, drinking water in school premises and furniture. Important information on inputs like blackboards and even chalks could be had with use of a simple command to the computer. The data base also belps know about academic and professional qualifications of working teachers, with particular reference to science and mathematics teachers.

Rs. 1.02 Crores Grant for APAU

The Andhra Pradesh Government is reported to have sanctioned Rs. 1.02 crores to the Andhra Pradesh Agricultural University (APAU) for setting up an agricultural college at Srikakulam, an agricultural polytechnic at Palem in Mahboobnagar district and a livestock research station for sheep and goat at Vijayawada during the academic year 1989-90. According to the Vice-Chancellor of APAU, Dr. A Appa Rao, the site for the proposed agriculture college at Srikakulam has also been identified.

Indian Council of Chemists meets at Tirupati

The VIII Annual Conference of the Indian Council of Chemists was hosted by the Department of Chemistry, Sri Venkateswara University at Tirupati. Inaugurated by Prof. G.J.V. Jagannadha Raju, Chairman, A.P. State Council of Higher Education, Government of Andhra Pradesh, the conference brought together research workers of different universities and institutions who discussed on research problems of common interest. The deliberations of the conference had a bearing on the further improvement of quality of research work concurrent to the present needs of the country and the people.

At the inaugural function, Shri G. Muddukrishnama Naidu, Minister for Forests, Government of Andhra Pradesh, was the chief-quest. In his address he indicated that scientists should ensure that the benefits of modern science reaches the common man and help in the betterment of the condition of human life.

A symposium on 'Problems of Energy and the Role of Chemists' was also held on this occasion. The papers presented, special lectures delivered and the discussions held in this symposium confined to alternative energy sources, challenging problems relating to energy and utilization of energy sources.

425 eminent scientists from various universities, IITs, CSIR Laboratories and other research institutions participated in this National Conference from all over the country at which 600 research papers were presented in all sections of chemistry. Several lectures were also delivered by eminent scholars.

IGNOU to Introduce New Courses

The Indira Gandhi National Open University (IGNOU) is introducing a new diploma course in food and nutrition from next academic year onwards. According to the IGNOU Vice-Chancellor, Prof. G. Ram Reddy, the proposed diploma course would be in addition to the 5-month certificate course in food and nutrition currently being conducted by the University. The new course to be imparted in English, Hindi, Gujarati. Assamese and Telugu would be extremely helpful to the rural health workers and women.

Prof. Ram Reddy pointed out that since its establishment in 1985, the IGNOU had so far introduced eight academic programmes attracting as many as 32,000 students from all over the country. He said that plans were in the offing to introduce undergraduate courses in library sciences and diplomas in early child-care and rural development next year. In addition, technical courses in varied fields would be introduced by 1990.

He said that a coordinating council for open universities had also been constituted. The council will take policy decisions to avoid duplication of course materials in the various open universities of the country besides taking steps for an uniform credit system.

Prof. Ram Reddy said the IGNOU was holding discussions with the Information and Broadcasting Ministry for featuring its programmes on AIR and Doordarshan. In all probability these educational programmes would be aired through the official media from next year onwards, he added.

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A List of Research Scholars Registered for Doctoral Degrees of Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Koparde, P.V. *Fixed point theorems in Hilbert Space.* Shivaji. Dr. B.B. Waghmode, Department of Mathematics, Shivaji University, Kolhapur.
2. Surve, G.P. *Studies in general relativistic continuum mechanics.* Shivaji. Dr. G.G. Asgekar, Department of Mathematics, Shivaji University, Kolhapur.

Physics

1. Bhatnagar, Anuj Swarup. *Laser plasma interaction.* Delhi. Prof. M.P. Srivastava, Department of Physics and Astrophysics, University of Delhi, Delhi.
2. Ganjoo, Ashutosh. *Amorphous semiconductors* Delhi. Dr. K.N. Tripathi, Reader, Department of Electronic Science University of Delhi, Delhi.
3. Jha, Arun Kumar. *Electric field improvements in strong inversion region of short channel mosfets.* Delhi. Dr. R.S. Gupta. Department of Electronic Science, University of Delhi, Delhi.
4. Jha, Ramesh Chandra. *Correlation functions in condensed systems.* Delhi Dr. S P. Tewari, Department of Physics, University of Delhi, Delhi.
5. Kaushik, Kalpana, *Design and development of microprocessor based data acquisition and control systems.* HS Gour. Dr. H.V. Verma, Reader, Department of Physics, Dr. Harisingh Gour Vishwavidyalaya, Sagar.
6. Mridula. *Signalling in faded channels.* Delhi. Dr. K.N. Tripathi, Reader, and Dr. Ashok De, Department of Electronic Science, University of Delhi, Delhi.
7. Pandey, Satyendra Nath. *Studies of dynamics of nonlinear systems using different theoretical techniques.* Gorakhpur. Dr. S.K. Bose, Reader, Department of Physics, University of Gorakhpur, Gorakhpur.
8. Rostamy, Zargham. *Microstrip antenna for millimetric applications.* Delhi. Dr. A.K. Verma, Department of Electronic Science, University of Delhi, Delhi.
9. Sheel, Bibhuti. *Spectroscopic studies of organic compounds.* Delhi. Prof. M.K. Machwe, Department of Physics, University of Delhi, Delhi.
10. Singh, Madan Prasad. *General areas of theoretical physics.* Delhi. Dr. V.S. Varma, Department of Physics, University of Delhi, Delhi.
11. Singh, Yashwant Kumar. *High energy hadronic interactions with emulsion nucleus.* Delhi. Prof D P. Goyal, Department of Physics, University of Delhi, Delhi.
12. Subodh Kumar. *Superconductivity and super fluidity.* Delhi. Prof. K.K. Singh, Department of Physics and Astrophysics, University of Delhi, Delhi
13. Uday Kumar. *Theoretical and experimental study on S & X band corrugated horns.* Delhi. Prof. G.P. Srivastava, Department of Electronic Science, University of Delhi, Delhi.
14. Varma, Neerja. *Some study in nonlinear physics with applications.* Gorakhpur. Dr. S.K. Bose, Department of Physics, University of Gorakhpur, Gorakhpur.

15. Varma, Sandeep. *Analysis and characterization of the depletion mode iopet.* Delhi. Dr. R.S. Gupta, Department of Electronic Science, University of Delhi, Delhi.

16. Verma, Purnima. *Drift instabilities in laboratory and space plasmas.* HS Gour. Dr. M.S. Tiwari, Reader, Department of Physics, Dr. Hari Singh Gour Vishwavidyalaya, Sagar.

Chemistry

1. Kathuria, Padma. *Thermodynamic and spectroscopic studies of mixed electrolyte solutions.* Delhi. Dr. R.K. Wadi, Department of Chemistry, University of Delhi, Delhi.

2. Khot, A.L. *Study of some manganese (III) complexes.* Shivaji. Dr. S.N. Deshmukh, Department of Chemistry, Shivaji University, Kolhapur.

3. Maikap, Golak Chandra. *Metal ion catalyzed C-C bond formations and their mechanistic investigations.* Delhi. Dr. J.M. Khurana, Department of Chemistry, University of Delhi, Delhi.

4. Tandon, Deepak. *Some novel reductions using nickel-boride and magnesium methanol.* Delhi. Dr. J.M. Khurana, Department of Chemistry, University of Delhi, Delhi.

5. Umadevi, P. *Studies in chemistry of high T.C. (critical temperature) super conductor oxides.* Kerala. Dr. K. Ravindran Nair, Scientist, Regional Research Laboratory, Trivandrum.

6. Unni, I.R. *Synthetic studies in metal carbonyls and related compounds.* Shivaji. Dr. C. Gopinathan, Scientist, Inorganic Division, National Chemical Laboratory, Pune.

Engineering & Technology

1. Semani, Mahesh Chandra. *Deformation process modelling and structure-property correlations of powder metallurgy super alloys* BHU. Dr. E.S. Bhagiradha Rao, Scientist E. Dy. Director, Defence Metallurgical Research Laboratory, Hyderabad and Dr. Vakil Singh, Reader, Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

BIOLOGICAL SCIENCES

Anthropology

1. Nair, Geeta. *A genetic study of the normal and abnormal haemoglobins at family and population level.* Delhi. Dr. (Miss) S. Tara Devi, Department of Genetics University of Delhi, Delhi.

Biochemistry

1. Kakkar, Neelam. *Role of polyamines in transcription in mycobacteria.* Delhi. Dr. Anil K. Tyagi.

2. Moonis, Mona. *Liposome research.* Delhi. Prof. B.K. Bachhawat, Department of Biochemistry, University of Delhi, Delhi.

3. Paul, Amla. *Liposome in immunology.* Delhi. Prof. B.K. Bachhawat, Department of Biochemistry, University of Delhi, Delhi.

Botany

1. Ahluwalia, Ritu. *Biochemical and biophysical studies on phosphorylation mediated changes in protein conformation.* Delhi. Prof. U.N. Singh, Department of Biophysics, University of Delhi, Delhi.

2. Chaudhury, Ashok. *Plant biotechnology : Cell tissue culture and genetic engineering studies in rice.* Delhi. Prof. S.C. Maheshwari, and Dr. A.K. Tyagi, Department of Botany, University of Delhi, Delhi.

3. Kanvinde, H.S. *Studies on estuarine ecosystem at Ratnagiri.* Shivaji. Dr. (Smt). L.J. Bhosale, Department of Botany, Shivaji University, Kolhapur.

4. Lal Bahadur. *Effect of boran and GA_3 on flowering, fruiting and fruit quality of Aonla cultivars.* BHU. Prof. J.K. Ojha, Department of Dravya Guna, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

5. Sharma, Pankaj. *The role of polyamines in cell and tissue culture of some economically important crop plants.* Delhi. Dr. M. Venkat Rajam.

6. Sharma, Vijay Kumar. *Molecular biology of photocontrol of plant development.* Delhi. Prof. S.C. Maheshwari, Department of Botany, University of Delhi, Delhi.

7. Subrahmanya Sastry, Vangala M.V. *Ecological studies of a few medicinally important marine algae.* BHU. Prof J.K. Ojha, Department of Dravya Guna, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

NATIONAL INSTITUTE OF RURAL DEVELOPMENT

NIRD requires **DIRECTORS** for the following faculties:

Total Annual Emoluments:
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Pension/CPF and health facilities additional.

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5. Director (Monitoring & Evaluation)
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Minimum qualifications sought are First or High Second Class Master's Degree with Ph.D. in the relevant discipline, 10 years experience in Research & Training, handling large scale Research Projects and Publication of books/papers.

Deputation from Govt. Departments/ Organisations/ Universities and other Institutions will be considered.

Desirous persons may seek full details regarding qualifications, service conditions and application forms from the REGISTRAR on payment of Postal Order of Rs. 5/-. Application with documents should reach Registrar, NIRD, **by 31.01.1989.**

Rajendranagar, Hyderabad-500 030.

ASP/NIRD/88150

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

athematics

1. Bharathi, K. *Quaternion function theory and applications.* Bangalore. Dr. M. Nagaraj, Prof., Department of athematics, Central College, Bangalore.

2. Mishra, Binod Kumar. *On some special types of linear perators.* Magadh

3. Mohammad Ilyas. *Some contributions to the theory of ommutators of operators.* Magadh.

4. Ramamoorthi, P. *On some analogues of perfect and armonic numbers.* Venkateswara. Prof. V.V. Subramanya Sastry, Department of Mathematics, Sri Venkateswara University College, Tirupati.

5. Singh, Paras Nath. *Some contributions to continuous flow in topological dynamics.* Magadh.

6. Singh, Saket Bihari. *Some fixed point theorems in topological vector spaces.* Magadh.

Statistics

1. Anandarajachari, A. *A markovian approach to system reliability and availability measures with common-cause failures.* Venkateswara. Prof. M.P. Sastry, Department of Statistics, Sri Venkateswara University College, Tirupati.

2. Sahariah, Bhubaneswar. *Interregional population interaction in Assam : A demographic appraisal.* Gauhati. Dr. A. Barthakur, Prof., Department of Statistics, Gauhati University, Gauhati.

3. Vivekananda Murty, Mushini. *A dynamic approach for a critical assessment of strategic manpower planning.* Andhra.

Physics

1. Chaubey, U.S. *Studies in evolution of close binary stars.* Kumaun. Dr. C.D. Kandapal, UPSO, Nainital.

2. Fuloria, R.B.S. *Relativistic configuration in astrophysics.* Kumaun. Dr. M C. Durgapa.

3. Katiyar, Arun Kumar. *Electron (positron) excitation of hydrogen, helium and the ions of their isoelectronic sequences.* Roorkee.

4. Pant, Pitamber. *Some studies related to solar flares and prominences.* Kumaun. Dr. M.C. Pandey.

5. Satya Raj Kumar. *Quaterminonic formalism and non-abeliam gauge theory of fields associated with dyons.* Kumaun. Dr. B.S. Rajput.

6. Sayanna, R. *The study of defects in some Mn2+doped alkali halide crystal.* Osmania.

7. Sinha, Rajendra Prasad. *The study of electronic spectra and structure of simple molecules (Molecular orbital method) : Alkenes, carboxylic acid and amides.* Magadh.

8. Sivakumar, K. *Structural studies on compounds of biological interest.* Anna.

9. Upadhyaya, R.P. *Study of fields associated with monopoles.* Kumaun. Dr. B.S. Rajput.

10. Verma, V.K. *Some studies of solar flares, surges and related phenomena.* Kumaun. Dr. M.C. Pandey.

Chemistry

1. Bisht, J.C. *Terpenoid composition of some high altituae flora.* Kumaun. Dr. C.S. Mathela.

2. Bisht, R.S. *Chemical examination of certain less known medicinal plants of Kumaun.* Kumaun. Dr. K S. Khetwa.

3. Changani, V.S. *Studies on some transition metal complexes.* Saurashtra. Dr. G.K. Joshi, Reader, Department of Chemistry, Saurashtra University, Rajkot.

4. Das Gupta, Manash. *Kinetics of reduction of transition metal ions by sodium tetrahydroborate.* NEHU. Prof. M.K. Mahanti, Department of Chemistry, North Eastern Hill University, Shillong.

5. Deopuzari, Sushma W. *Studies on evolution of iron and zinc containing enzymes.* Roorkee.

6. Dhami, K.S. *Chemical investigation of some fodder grasses of Kumaun and their nutritive value.* Kumaun. Dr. H.D. Pathak.

7. Gupta, Daya Shanker. *Trace analysis of certain substances including pollutants in water and air.* Durgawati. Dr K K. Verma, Reader, Department of Chemistry, Rani Durgawati Vishwavidyalaya, Jabalpur.

8. Jain, Praveen. *Physico-chemical investigation of proteins and amino acids of some Indian plant seeds.* Bhopal. Dr. R.M. Shrivastava, Prof., Department of Chemistry Bhopal University, Bhopal.

9. Jha, Madan Mohan. *Studies on compounds of chromium and iron systems.* Magadh.

10. Lawrence, N. *Lattice dynamical investigation to hydrogen in metals in relation to their application in energy storage.* Madurai.

11. Malik, Mritunjaya. *Development and characterization of newer carbon products.* Panjab.

12. Manral, Krishan. *Chemical investigation of certain medicinal plants of Pindari Glacier.* Kumaun. Dr. K.S. Khatwal.

13. Mishra, Brindaban. *Lead and copper substitution in the calcium hydroxylapatites.* Sambalpur. Dr. P.N. Patel, Department of Chemistry, G M. College, Sambalpur.

14. Munishwar Kumar. *Studies on metal complexes of substituted 1, 2, 4-triazoles.* Magadh.

15. Narasimha Reddy, T. *Studies in electrode processes involving some pesticides.* Venkateswara. Prof. S. Jayarama Reddy, Department of Chemistry, Sri Venkateswara University, College of Engineering, Tirupati.

16. Nehete, Dilip Tolu. *The chemistry of transition metalnitrosyls and metal-thionitrosyls.* Devi Ahilya. Dr. K.K. Pandey, Department of Chemistry, Devi Ahilya Vishwavidyalaya, Indore.

17. Paneerselvam, N. *Investigations on the environmental chemicals (studies on the monitoring of pesticide genotoxicity in the barley test system).* Madurai.

18. Poorna Chandra Rao, Kolli. *Thermodynamic and physical properties of binary liquid mixtures.* Venkateswara. Dr. K. Subramanyam Reddy, Department of Chemistry, Sri Venkateswara University, Tirupati.

19. Pradhan, Manisha. *Milligram determination of a few organic compounds.* Magadh.

20. Ramanjaneyulu, K. *Physico-chemical properties of binary non electrolyte solutions.* Venkateswara. Dr. A. Krishnaiah, Department of Chemistry, Sri Venkateswara University College of Engineering, Tirupati.

21. Ray, Sumita. *Studies on lipids.* Calcutta.

22. Reddy, D. Meghanath. *Investigation of C_7H_8N+, $C_{12}H_{11}N+$ and $C_{12}H_{10}S+$ ion structures by mass spectrometry.* Osmania.

23. Sankaraiah, Uppu. *Azine and oxazine dyes as redox and adsorption indicators.* Andhra.

24. Sarkar, Bibekranjan. *Studies on antiamebic agents.* Calcutta.

25. Sarmn, Kula Nath. *Kinetic studies on the aminolysis of some O-aryl osime.* Roorkee.

26. Satyanarayana, Mushini. *Kinetic and mechanistic studies of some oxidation reactions of iron (III) in the presence of terpyridine and TPTZ.* Andhra.

27. Shrivastava, Mamta. *Medicinal and physicochemical study of some Indian vegetable oils.* Bhopal. Dr. R.M. Shrivastava, Prof., Department of Chemistry, M.V. Mahavidyalaya, Bhopal.

28. Singh, Langonjam Koanhai. *Thermal investigation and stereochemical studies of some cyclic diamine complexes of nickel (II), zinc (II) and cadmium (II) in the solid state.* Manipur. Dr. S. Mitra, Assoc. Prof., Department of Chemistry, Manipur University, Imphal.

29. Sinha, Anuj Kumar. *Studies on microbial production of citric acid.* Magadh.

30. Siva Sankar, P. *Studies in electrode processes involving some drugs and pharmaceuticals.* Venkateswara Prof. S. Jayarami Reddy, Department of Chemistry, Sri Venkateswara University College of Engineering, Tirupati.

31. Srinivasan, K.N. *Studies on the influence of addition agents in electroplating solutions with special reference to zinc plating baths.* Madurai.

32. Verinder Kaur. *Investigations towards the synthesis of B-lactams.* Panjab.

33. Vijayalakshmi, K. *Polarography of organic compounds with special reference to some thio and nitro compounds.* Venkateswara. Prof. K. Saraswathi, Principal, S.P.W. Mahila University College, Tirupati.

Earth Sciences

1. Bhowmik, Ashok Kumar. *Study of some teak forests of Madhya Pradesh in relation to soil with special reference to trap rocks.* Durgawati. Dr. P.S Agarkar, Head, Department of Geology, Government Science College, Jabalpur and Dr. N.G. Totey, S.D.O. Forest Soil, Vegetation Survey, F.R.I. and College, D.D., Jabalpur.

2. Chalapathi Rao, K. *Hydrology of the Kaundinya River Basin, Chittoor District, Andhra Pradesh, India.* Venkateswara. Dr. G.V.S Rama Rao, Department of Applied Geology, Sri Venkateswara University College, P.G. Centre, Cuddapah.

3. Madhusudhana Rao, Malisetti. *Land and water resources of Rayachoti Taluk, Cuddapah District, Andhra Pradesh, India.* Venkateswara. Dr. K.V.R. Chari, Department of Applied Geology, Sri Venkateswara University P.G. Centre, Cuddapah.

4. Radhakrishna, S. *Study of the geology and mineralization aspects of rocks: Kolar Gold Field Region with emphasis on Chigargunta Gold occurrences.* Venkateswara. Dr. P.T. Nayudu, Department of Geology, Sri Venkateswara University, Tirupati.

5. Sehgal, Uma. *Petrology and geochemistry of Rampura-Aguncha massive sulfide deposit, Bhilwara District, Rajasthan.* Delhi.

Engineering & Technology

1. Ashwani Kumar. *Micro-earthquakes-recording and study of their parameters for selected regions.* Roorkee.

2. Gopal Krishan. *Convective droplet vaporization with transient liquidphase heating in the absence of liquidphase motion.* Roorkee.

3. Humar, Swarajyamal. *Critical evaluation of foundation practices in black cotton soils towards economy in design.* Devi Ahilya.

4. Mishra, P.K. *Simulation studies of flexible manufacturing system.* Roorkee.

5. Mohibullah. *Force commutated inverters for conversion and control of MHD power.* Aligarh. Prof. K.P. Basu, Department of Electrical Engineering, Aligarh Muslim University, Aligarh.

CLASSIFIED ADVERTISEMENTS

NATIONAL GEOPHYSICAL RESEARCH INSTITUTE

(COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH)

Uppal Road, Hyderabad-500 007

Advertisement No. 2/88

Applications for appointment in the following posts in the Institute, are invited :

Abbreviations :

MQ : Minimum qualifications.
FE : Field of experience.
JR : Job requirements.

1. Scientist EI/Scientist EII.

Scales of Pay: Rs. 3700-125-4700-150-5000 4500-150-5700.

No. of Posts : One.

This is a position of leadership which will require ability to formulate, plan, guide and execute innovative programmes of basic and applied significance in Modern Geology. This Institute is well equipped to conduct research to contemporary standards and pursues a wide spectrum of topical problems through mineralogical, chemical and isotopic studies on carefully chosen areas and topics. Appropriate modern facilities like XRF, Electron Probe, Plasma Source Mass Spectrometer, and Mass Spectrometer for radiogenic/stable isotopes are available.

MQ : First Class M.Sc. with 12 years of experience.

OR

Ph.D. with about 10 years of R&D experience.

Subject : Geology.

FE : R&D experience in Precambrian Geology, especially on Precambrian volcanosedimentry processes, stratigraphy, palaeobiology and crustal evolution.

JR : Candidate will complement and collaborate with ongoing research programs at the Institute on the evolution of the earth's crust and mantle in the broadest sense.

2. Scientist B Grade IV(1)/Scientist C Grade IV(2)

Scales of Pay : Rs. 2200-75-2800-EB-100-4000/Rs. 3000-100-3500-125-4500.

No of Posts : Twenty.

MQ : for Scientist IV(1) First Class M.Sc./First Class B.E.. or First Class B.Tech., or M. Tech/M.E./Ph.D. (Science).

For Scientist IV(2) : First Class M.Sc. or First Class B.E., or First Class B.Tech., with six years of experience; or M.E./M.Tech with four years of experience; or Ph.D. (Science) with two years of experience; or Ph.D. (Engg.).

For Post 2 (i)

Subject : Geophysics/Physics.

FE : Research experience in electromagnetic exploration/ magnetotellurics, as evidenced, e.g., by publications in reputed journals.

JR : Study of electrical structure of lithosphere through magnetotelluric measurements. The work would involve all aspects of magnetotelluric exploration including field data acquisition, computer data processing and interpretation.

For Post 2(ii) & (iii)

Subject : Geology/Physics.

FE : Research experience in experimental petrology/geo-chemistry or isotope geology as evidenced, e.g., by publications in reputed journals.

JR : Petrogenetic, geochemical and geochronological studies using modern isotopic techniques. The work would require experimental competence and flair for instrumentation.

For Post 2(iv) : Reserved for ST, but general candidates may also apply for consideration, if suitable SC/ST candidates are not available).

Subject : Geophysics/Physics/Applied Mathematics,

FE : Research experience in geophysical signal processing as evidenced, e.g., by publications in reputed journals.

JR : Data inversion, signal processing and numerical modelling of geological/geophysical data series.

For Post 2(v)

Subject : Physics/Applied Physics/ Geophysics.

FE : Research experience in airborne/statellite geophysical surveys and interpretation as evidenced, e.g., by publications in reputed journals.

JR : Correlation, analysis and interpretation of MAGSAT and satellite data.

For Post 2(vi)

Subject : Geology/Geophysics.

FE : Field experience in groundwater exploration.

JR : Evaluation, management and augmentation of groundwater resources. The work include field and laboratory measurements of various geohydrological parameters.

For Post 2(vii)

Subject : Geophysics/Instrumentation/Physics. Candidates with Second Class in M.Sc. and adequate experience may also apply for this post.

FE : Operation and maintenance of seismological observatory including analysis of seismograms.

JR : Organizing and operation of a local seismological network of stations in North-East India. The incumbent will be posted in the North-Eastern region of India.

For Post 2(viii) : (Reserved for SC, bur general candidates may also apply for consideration, if suitable SC/ST candidates are not available).

Subject : Physics / Communication Engg./Geophysics.

FE : Signal processing and pattern recognition.

JR : Study of the physics of rock failure processes. The work would involve processing of acoustic emission signals from rock masses fracturing under stress.

For Post 2(ix)

Subject : Geology/Geophysics.

FE : Research experience in hydrogeology including the use of tracers.

JR : Study of flow of groundwater using tracers. The work would include collection and processing of hydrological/hydrochemical data and development of related computer software.

For Post 2(x)

Subject : Geophysics/Applied Mathematics/Statistics.

FE : Marine Geophysical surveys.

JR : Study of the physical structure of the oceanic lithosphere. The work would involve acquisition of marine geophysical data and interpretation.

For Post 2(xi)

Subject : Geophysics/Physics.

FE : Research experience in development of computer software for geophysical interpretation.

JR : Research in the field of airborne geophysics. The work would involve airborne data acquisition and development of software for processing and interpretation of airborne geophysical data.

For Posts 2(xii) & 2(xiii) : One of the two posts Reserved for SC; but General candidates may also apply for consideration, if suitable SC/ST candidates are not available).

Subject : Computer Science/Electronic Engineering.

FE : Experience in development/ maintenance of application/systems software in a multiprogramming environment, preferably on a main frame system.

JR : Operation of a main frame computer centre, comprising CDC Cyber computer system, development/maintenance of application/systems software. The operation will involve duties in shifts.

For Posts 2(xiv) & 2(xv)

Subject : Geophysics/Physics / Applied Mathematics.

FE : Research experience in numerical modelling as evidenced, e.g , by publications in reputed journals.

JR : Study of the thermomechanical structure and evolution of the earth. The work would mainly involve the numerical modelling of the geomechanical processes.

For Post 2(xvi)

Subject : Geophysics / Physics with Electronics/Electronics.

FE : Operation, repair and maintenance of digital electronic instruments, preferably of seismic recording instruments.

JR : Repair, maintenance and field operation of digital seismic systems and acquisition of field seismic data

For Post 2(xvii)

Subject : Physics/Mathematics/Computer Science / Electrical/Communication Engineering.

FE : Geodetic Computation and data processing or Astronomical Radio Interferometry or signal processing for enhancement of signal/noise ration and detection of signal buried in noise.

JR : Correlation processing of radio interferometric data, Geodetic computations using astronomical data and estimation of relative movement between different stations by using Very Long Baseline Interferometry (VLBI).

For Post 2(xviii)

Subject : Computer Science/Electronic Engineering.

FE : Development and use of system utilities and software libraries in a Computer system.

JR : Supporting the Management of System Software facilities of a mainframe computer and development of special purpose system software facilities.

For Post 2(xix)

Subject : Electrical Engineering

FE : Operation of Electrical Power Supply and Support system involving generators. Uninterruptible power supply, airconditioners, etc.

JR : Maintenance and monitoring of an electrical support system for continuous, uninterrupted operation of a mainframe computer system and interaction with operation and maintenance personnel.

For Post 2(xx)

Subject : Electronics/Communication Engg./Computer Science.

FE : Work with digital data acquisition system, Radio Telemetry and/or digital Seismological observatory apparatus and experience of independently running and maintaining such systems.

JR : Running and maintenance of digital seismic telemetry system. Posting will normally be at Seismic Field Stations away from Headquarters.

3. Technical Assistant, Grade III(2).

Scale of Pay : Rs. 1640-60-2600-EB-75-2900.

No. of Posts : Six

MQ : B.Sc. (Science), or Diploma in Engineering/Technology of three years duration, or equivalent, plus 3-5 years relevant experience.

OR

M.Sc./B.E./B.Tech or equivalent.

For Post 3(i) : (Reserved for S.T.)

Subject : Physics / Instrumentation/ Geophysics.

FE : Operation and maintenance of seismological observatory.

JR : Operation and maintenance of a seismological observatory. The incumbent will be posted in North-Eastern region of India.

For Post 3(ii)

Subject : Electrical / Refrigeration/ Airconditioning.

FE : Repair and maintenance of refrigerators/airconditioners, diesel generators and/or water pumps.

JR : Repair and maintenance of refrigeration and airconditioning systems of the Institute/high power diesel generators/heavy duty water pumps.

For Post 3(iii)

Subject : Chemistry.

FE : Chemical analysis of rocks and computer processing of data.

JR : To carry out conventional and instrumental chemical analysis and computer processing of geological/geochemical data.

For Post 3(iv) & (v) : (Reserved : One for SC and one for ST, but as this is 2nd Advt., General Candidates may apply for consideration, if suitable SC/ST candidates are not available).

Subject : Electrical,

FE : Operation of uninterrupted power supply, generators, air conditioners, etc.

JR : Assisting in proper operation and Maintenance of electrical support system for a computer centre.

For Post 3 (vi) : (Reserved for SC, but as this is 2nd Advt. General Candidates may also apply for consideration, if suitable SC/ST candidates are not available).

Subject : Physics/Geophysics/Mathematics/Geology.

FE : Processing and Interpretation of seismic data.

JR : Participation in field work for Deep Seismic Sounding Studies in different parts of the country, Computer Aided processing and interpretation of DSS data.

4. Technical Assistant, Grade III (1).

Scale of Pay : Rs. 1400-40-1800-EB-50-2300.

No. of Posts : Twelve.

MQ : B.Sc. (Science) or Diploma in Engg /Technology of three years duration, or equivalent.

For Post 4 (i)

Subject : Physics/Electronics/Instrumentation.

Desirable experience : Experience in computerised data handling.

JR : The work would involve magnetotelluric field surveys and data processing. The field work may be in remote areas.

For Post 4 (ii), 4 (iii), 4 (iv) & 4 (v) : (One of the four posts Reserved for SC).

Subject : Physics/Electronics/Instrumentation.

Desirable experience : Handling seismic instruments.

JR : To assist in the installation, operation and maintenance of the seismic instruments in the different parts of the country. Posting will be in remote areas like North-Eastern region of India.

For Post 4 (vi)

Subject : Physics/Mathematics/Electronics.

Desirable experience : Geophysical data acquisition in the field.

JR : To assist in operation of field geophysical instruments such as field seismic units, resistivity meters, magnetometers, etc.

For Post 4 (vii)

Subject : Physics/Mathematics/Ele tronics.

Desirable experience : Geophysic map compilation and interpretation.

JR : To assist in the airborne geoph sical surveys. The work would invol inflight data acquisition and con puterised data processing

For Post 4 (viii) : (Rserved for S.T.) :

Subject : Chemistry/Geology/Physic

Desirable experience : Chemica analysis of groundwater.

JR : Analysis of water samples bot in the field and laboratory.

For Posts 4 (ix) & 4 (x)

Subject : Physics/Mathematics.

Desirable experience : Computerise data handling.

JR : To assist in marine geophysica data acquisition and interpretation.

For Post 4 (xi) : (Reserved for ST but as this is a repeated Advertisement, General Candidates may also apply, for consideration, if suitable SC/ST candidates are not available).

Subject : Mathematics/Physics.

JR : Assistance in running the geomagnetic observatory of N.G.R.I., preparation of records and computer processing of data.

For Post 4 (xii) : (Reserved for ST, but as this is second Advt., General candidates may also apply for consideration, if suitable SC/ST candidates are not available).

Subject : Physics/Mathematics/ Instrumentation.

JR : Running and maintenance of a field seismological network of stations, Reading of seismograms.

GENERAL CONDITIONS

1. The number of posts are tentative and are subject to variation, depending on the number of vacancies at the time of selection.
2. The appointments to the posts of Technical Assistant (Gr. III) (2) and Technical Assistant (Gr. III) (1) will be on pensionable temporary service and likely to continue.
3. The appoinments to the posts of Scientist 'EII'/Scientist 'EI' and Scientist 'C'/Scientist 'B' will be on contract for a period of six

years (including probation of two years), in the first instance, except for C.S.I.R. Employees already permanent in lower posts.

4. The posts carry allowances as admissible to the Central Government employees. The total emplumcnts at the minimum of the pay scales are as presently as under.

	Pay Scale	Total Emoluments
(i)	Rs. 4500-5700 . .	.. Rs. 6,405-00
(ii)	Rs. 3700-5000 . .	. . Rs. 5,405-00
(iii)	Rs. 3000-4500 ..	. . Rs. 4,390-00
(vi)	Rs. 2200-4000 . .	. . Rs. 3,256-00
(v)	Rs. 1640-2900 . .	. . Rs. 2,567-00
(vi)	Rs. 1400-2300 . .	. . Rs. 2,017-00

5. Candidates with Engineering qualifications, are liable to serve, if so required, in any Defence Service or post connected with the Defence of India for a period of not less than four years, including the period spent on training, if any, provided that such persons (a) shall not be required to serve on the above said post after the expiry of ten years from the date of appointment; and (b) shall not be ordinarily required to serve as aforesaid after attaining the age of forty five years.

6. Application forms may be obtained from the Institute's address given above, by sending a requisition, along with a self-addressed stamped envelope (23 x 10 cm) affixed with postal stamps of Rs. 1-50 ps on or before 26-12-1988.

7. Application for each post should be separate, even if the posts applied for are from the same category or with the same qualifications, indicating clearly the Advertisement Number, complete serial number of the post (including the sub-serial number). In case of failure to comply with this condition, the application is liable to be considered as invalid.

8. Applications duly completed (supported by attested copies of Degress/Diplomas and statements of marks of educational qualifications, experience certificates, Community Certificates (in the case of SC/ST Candidates), along with application fee (Non-refundable) of Rs. 8/- (Rupees Eight only) in the form of Crossed Indian Postal Order drawn in favour of the Director, National Geophysical Research Institute, Hyderabad, should be sent so as to reach him on or before **16th January, 1989.** The Candidates of S.C. or S.T. Communities are exempt from payment of application fee.

9. Applications from employees of Government Departments/Public Sector Organisations/Government Funded Research Agencies will be considered only if forwarded through the proper channel, certified by the Employer that the applicant will be relieved within one month of the receipt of the appointment orders, if selected.

10. Applications incomplete in any manner, are liable to be considered as invalid.

11. Candidates claiming to be of S.C./S.T. Communities, should invariably enclose an attested copy of Caste Certificate issued by the Competent authority, along with their application, failing which the candidate will not be entitled to the concessions otherwise admissible to them.

12. Applications received after the last date viz. 16-1-1989, will not be considered.

13. Mere fulfilling of the minimum eligibility will not entitle the candidate to a call for interview.

14. A lower standard of suitability consistent with efficiency will be applied in respect of SC/ST Candidates.

15. A candidate applying for a post may be considered for a post carrying lower scale of pay, if he is not suitable for the post for which he has applied.

16 Higher start of pay may be considered in case of exceptionally meritorious candidates.

17. Candidates selected for interview will be paid single Second Class to and fro rail fare (by shortest route) from the actual place of undertaking the journey or the place of address for correspondence in the application, whichever is nearer to Secunderabad Railway Station, on production of relevant documents of travel.

18. Canvassing in any form and/or bringing of any influence, political or otherwise, will be treated as a disqualification for the post.

19. Interim Enquiries will not be Entertained.

K.R. Sarma
Controller of Administration

NEHRU MEMORIAL MUSEUM AND LIBRARY

Fellowships in Perspective in Indian Development

Applications are invited from Social Scientists for the award of Fellowships for conducting research on the themes (1) Tribal Development (2) Changing Status of Women in Society, (3) Social Identities and Integration of the Indian Nation, (4) Linguistic and Political Loyalties, (5) Roots of Communalism in Indian Society; and (6) Problems of Indian Ecology.

Fellowships are in the range of Rs. 4500-7300 & Rs. 3700-5700 and carry allowances at Central Government rates plus contingency grant of Rs. 7,500 p.a. Fellowships are for two years renewable for another year.

The Nehru Memorial Museum and Libray reserves the right of publication of research papers and monographs prepared by Fellows during the tenure of their fellowships. The Fellows will be based in Delhi. The Selection Committee would have the right to recommend award of fellowships to scholars who may not have applied.

Those who wish to be considered should send a note, not exceeding 1,000 words, on the project proposed to be undertaken along with the following Information to Director, Nehru Memorial Museum and Library, Teen Murti House, New Delhi-110 011, latest by **31st January, 1989** (i) Name (ii) Address (iii) Date of birth (iv) Academic record (v) Details of post-graduate work and list of publications with copies (vi) Details of how employed so far, and (vii) Names and address of two referees. Candidates in employment should apply through proper channel. Those who had already applied in response to our earlier advertisement need not apply. Their applications will also be considered along with the fresh applicants.

davp 88/585

Institute of Engineering & Technology

SITAPUR ROAD, LUCKNOW-226 020

Advertisement No. 4/88

Applications are invited from Citizens of India for the following positions at this Institute in the prescribed forms obtainable free of charge from the Deputy Registrar of the Institute on request accompanied by a self addressed stamped (Rs. 1.80) envelope (25 x 10 cms.)

Sl. No.	Name of the Post	No. of Post	Scale (pre-revised)	Qualifications & Experience
1.	System Manager/System Engineer (Software)	1	Rs. 1250-2050	Master's Degree in Computer Science with specialization in software engineering with relevant experience. Or
2.				M.Sc. Physics with Electronics telecommunication (specialization) and one year experience in software development at organization/institution where adequate computer facilities in running conditions are available.
3.	Programmers	2	Rs. 850-1720	Master's Degree in Computer Science/PGDCA with 7 years experience on Computer.
4.	Computer Operator	2	Rs. 570-1100	B.Sc. with Maths, Physics and good knowledge of computer operations. Or Diploma in Electronics and good knowledge of operating the Computer System.
5.	Accountant	1	Rs. 570-1100	DTE or M. Com. (B. Com. in Accountancy)
6.	Asstt. Accountant	1	Rs. 470-735	B.Com. with Accountancy.
7.	Mechanic Grade 'A'	6	Rs. 470-735	High School, Diploma/Certificate and 2/5 years experience in different workshop trades.
8.	Cataloguer/Lib. Assistant	2	Rs. 400-615	Certificate in Library Science and some experience in cataloguing.
9.	Lady Matron (for girls hostel)	1	Rs. 400-615	Intermediate + 5 years experience.
10.	Junior Noter Drafter	1	Rs, 400-615	Intermediate + 5 years experience.
11.	Accounts Clerk	2	Rs. 400-615	Intermediate with Commerce + 5 years experience.
12.	Punch Operator	2	Rs. 354 550	Intermediate and training in key punching.
13.	Lab. Assistant	5	Rs. 354-550	Intermediate Science+2 years experience
14.	Mechanic Grade 'B'	3	Rs. 354-550	ITI Certificate and 2 years experience.
15.	Store purchase Assistant	1	Rs. 354-550	Intermediate + 5 years experience.
16.	Junior Accounts Clerk	2	Rs. 354-550	Intermediate Commerce.
17.	Routine Grade Clerk/Typist	3	Rs. 354-550	Intermediate with minimum speed of 30 in English typing and 25 in Hindi.
18.	Library Clerk	1	Rs. 354-550	Intermediate

Preference will be given to higher qualification and relevant experience.

Posts carry allowances and other benefits as approved by the U.P. State Government from time to time. Depending on qualifications and experience a higher start may be offered.

Number of posts can be increased; decreased or withdrawn at the discretion of the Institute Authority.

Applications on prescribed form should reach the Director, Institute of Engineering and Technology, Lucknow-226 020 by 5 p.m. on **January 9, 1989**.

Anil Kumar Saxena
DEPUTY REGISTRAR

Central Institute of Hindi
HINDI SANSTHAN MARG,
ARGA-282005

Adv. No.4/88-89

Applications are invited from Indian citizens for the post of Registrar in the Pay Scale of Rs. 3700-125-4700-EB-150-5000.

Qualifications
Essential

(a) First or high second class Master's degree or equivalent qualification. (b) Hindi at least upto the Bachelor's level for those who have not possessing a Master's degree in Hindi. (c) Experience of at least four years in an administrative capacity in an educational institution/organisation dealing with education administration and planning. (d) Ability to take organisational charge of meetings and administrative affairs of an educational institution/Organisation (e) Very good knowledge and abillty in preparation of Agenda and Minutes of meetings of important bodies.

Desirable

(a) Skill in drafting, appreciation of finance & accounts problems and some aptitude for public relations, some interest in the intellectual processes of the educational institutions/organisation and its development. (b) Degree in law/degree or diploma in public administration.

Eligibility

Officers holding analogous posts or with 5 years service in posts in the scale of pay of Rs. 3000-4500 or equivalent in the Central/State Govt./Universities/Educational Institutes.

Note : Relaxation of any of the qualifications may be made in exceptional cases in favour of persons of high academic or professional distinction.

Age : Not below 35 years.

APPLICATION FORM

(1) Post Applied for (2) Name (In Block Letters) (3) Father/Husband's Name (4) Present Postal Address with Pin Code (In Block Letters) and Telegraphic Address (5) Date of Birth (6) Date of Superannuation from present service (7) Whether belonging to SC/ST (8) Educational Qualifications :

Sl. No.	Examination Passed	Name of Board/ University	Year	Total Marks and Percentage	Division	Subjects Offered

(9) Posts held in last 10 years beginning from the present post & mentioning duration for which post held & nature of duties performed (use seperate sheets) :

Sl. No.	Name of Office	Post held & Scale of Pay	Period		Nature of work handled
			From	To	

(10) Nature of post held (whether Permanent/Quasi-Permanent/Temporary/Adhoc/Regular (11) Scale of Pay and present basic pay & gross emoluments. (12) Name/Particulars of the Employer clearly indicating Name/Designation of the relieving/Controlling Authority. (13) Details of Training of Administrative and Financial Rules and procedures, etc. if any (with full particulars) (14) Any other relevant information.

Remarks of the Forwarding Officer

Signature of the Applicant

Terms and Conditions

1— Pay and allowances as Sanctioned by the Central Government and approved by the Mandal from time to time.
2— Age of retirement is 58 years.
3— Candidates must enclose copies of their testimonial with applications.
4— Applications must reach the Director, Kendriya Hindi Sansthan, Agra-282005 through proper channel on or before **31.1.89.**

F. No. 2-133/88-89

PUNJABI UNIVERSITY
PATIALA

Advt. No. 57/PRO/RECT

Applications are invited for the following posts so as to reach the Assistant Registrar (Estt.) on or before **6-1-1989.**

1. **Professors :** One each in Mahavira Chair for Jaina Studies in G.G.S. Deptt. of Religious Studies, English for University Regional Centre Bhatinda, Business Management for Guru Kashi Institute of Advanced Studies, Damdama Sahib and Deptt. of Computer Science & Application.

Grade : Rs. 4500-150-5700-200-7300 (UGC).

Specializations

English : Commonwealth Literature/Modern British/American Literature.

Computer Science & Application : Computer Application/Computer Science.

Guru Kashi Inst. of Adv. Studies : Strategic Management/Marketing Management.

2. **Readers :** Two each for Deptt. of Economics, Business Management for Guru Kashi Institute of Advanced Studies and one in Human Biology.

Grade : Rs. 3700-125-4950-150-5700 (UGC).

Specializations

Economics : Money & Banking OR Transport Economics OR Economic Thought.

Guru Kashi Inst of Adv. Studies : 1. Finance and Banking 2. Quantitative Techniques/Enterpreneurship.
Human Biology : Anatomy/Physiology.

Note : Candidates should hold M.Sc. and Ph.D. degrees in Anatomy/Physiology with 5 years postgraduate teaching experience as Lecturer and should be able to teach both Anatomy and Physiology at postgraduate level.

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Specializations

Deptt. of Economics : Macroeconomics or Economic History or Monetary Economics.

Guru Kashi Inst. of Adv. Studies : Production Management / Personnel Management / Financial Management/ Marketing Management.

Zoology : Cell Biology.

Economics (CC) : Political Economy or Quantitative Methods in Economics or Agricultural Economics.

Economics (R.C. Bhatinda) : Indian Economy or Regional Economics.

NOTE

1. The Vice-Chancellor could also place before the Selection Committee names of suitable persons for the post of Professor.
2. It is not obligatory to call for Interview every candidate who possesses the essential qualifications.
3. The number of vacancies may change.
4. Candidates must possess working knowledge of Punjabi.
5. The Selection Committee might relax the qualifications/experience in exceptional cases.
6. Details of qualifications, specializations, etc., will be supplied alongwith the application forms.

Application Forms can be obtained from the Head of the University Publication Bureau, on payment of Rs. 5.00 at the Counter OR by sending IPO for Rs. 5.00 in favour of the Registrar, alongwith a self-addressed envelope (25 × 10 cms.) with postage worth Rs. 5.50, superscribing on it Application for the Post of———

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NATIONAL GEOPHYSICAL RESEARCH INSTITUTE

(Council of Scientific and Industrial Research)

HYDERABAD-500 007

CORRIGENDUM TO ADVERTISEMENT NO. 2/88

I. Under Sl. No. 2, read Number of Posts as 24 instead of 20.

II. Under Sl. No. 2 against Post No. 2 (xvi) add the following :

No. of Posts : Two

III. For Post 2 (xvii), the following may be substituted :

Subject : Microwave Engineering/ Electronics/Physics.

F.R. : Microwave Communication Engineering, Ultra Stable time standards, serve control of steerable antennas.

J.R. : Proper acquisition of Very Long Baseline Radio Interferometry data, Calibration of system, etc.

IV. Add the following as 2 (xxi)

Subject : Industrial Electronics/ Communication Engg.

F.E. : Highpower Solid State Control Electronics.

J.R. : Design and construction of a high power—(100 KW) solid state device for injecting switched current into the ground, field operation, testing and maintenance of geophysical instruments.

V. Add the following as 2 (xxii) & 2 (xxiii)

Subject : Physics/Electronics Engineering/Communication Engineering.

F.E. : Use of modern digital seismic data acquisition systems and signal processing, borehole geophysical logging system, ocean bottom profiling equipment, ground probing radar, airborne geophysics or other geophysical systems of comparable complexity.

J.R. : Acquisition of Geophysical signals with Modern Systems as well as Machine editing/storage/transfer and processing of such signals. Job will include field operation and maintenance of instruments and devices used.

VI. Candidates fulfilling the following requirements are also eligible to apply for posts No. 2 (xii), 2 (xiii) or 2 (xviii)

Subject : Computer Science/Communication Engineering/Electronics/ Instrumentation.

F.E. : Operation and maintenance of (i) mainframe computer circuits as well as magnetic disk/tape/casette units and/or (ii) Computer network, computer workstations and computer peripherals such as Video/graphic terminals, line printers, electrostatic printer/plotters, digitizers.

J.R. : To assist in carrying out the preventive/periodic / routine maintenance work of a mainframe computer system; interaction with the users as well as system software and operation personnel.

VII. The last dates will be as under :

Receipt of requests for application : **6-1-1989.**

Receipt of completed applications : **23-1-1989.**

K.R. Sarma
Controller of Administration

UNIVERSITY OF DELHI

DEPARTMENT OF COMPUTER SCIENCE

ADMISSION NOTIFICATION FOR 'MASTER OF COMPUTER APPLICATIONS'—1989

Applications are invited, on all India basis. for admission to the 3-year Degree Course in Master of Computer Applications (MCA) for the session starting from July 10, 1989 in the Department.

A request for the Eligibility Conditions and the prescribed Application Form for the M.C.A. Admission Test, fixed for SUNDAY, FEBRUARY 19, 1989 and to be conducted only at Delhi University, Delhi, be addressed to Shri K.S. Krishna, Senior Assistant (In-charge), Department of Computer Science (Room No. 303), Arts Faculty Extension Building, University of Delhi, Delhi-110007 alongwith a crossed bank draft for Rs. 7/- payable at Delhi and made out in favour of the Registrar, University of Delhi. A request by mail should accompany a self-addressed and postage stamped (Rs. 2/20 p.) 10"×7" envelope.

Last date for receipt of completed applications is **Friday, February 03, 1989**.

Prof. K.D. Sharma
HEAD

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University News

MONDAY, DECEMBER 26, 1988 Rs. 2.50

emic Procession of the Seventh Convocation of Sri Sathya Sai Institute of Higher Learning (Deemed University) held o
ember 22, 1988. Seen in the front row (from L to R) are : Shri K. Brahmananda Reddy, Governor of Maharashtra, who
ivered the convocation adderss, Bhagawan Sri Sathya Sai Baba, Revered Chancellor and Dr. S.N. Saraf, Vice-Chancellor

UNIVERSITY OF DELHI

No. Estab./IV/117/88 **Dated : 12.12.1988**

Applications in the prescribed form are invited for the following posts :

Sl. No.	Department	Post	No. of Vacancies	Scale of Pay
1.	Central Office	Information Officer	One	Rs. 1200-50-1300-60-1900 (Pre-revised)
2.	Centre for Human Resource Development	Deputy Director	One	-do-
3.	Centre for Professional Development in Higher Education	Senior Technical Assistant	One*	Rs. 1640-60-2600-EB-75-2900
4.	Physics and Astrophysics	Technical Assistant	One*	Rs. 1400-40-1800-EB-50-2300
5.	Zoology	Laboratory Attendant	One* (Reserved for Scheduled Caste)	Rs. 800-15-1010-EB-20-1150
6.	Geology	-do-	One*	-do-
7.	University Science Instrumentation Centre	Technician Grade VII (Glass Blowing)	One*	Rs. 975-25-1150-EB-30-1540

All the posts carry DA, CCA and HRA etc. as admissible under the rules in force in the University from time to time.

ESSENTIAL QUALIFICATIONS

Information Officer : A Second Class Master's degree with Dipioma in Journalism and/or adequate experience of Journalism and publications/public relations work.

Deputy Director : (a) A good Bachelor Degree in Arts/Science/Commerce/Engineering or Technology of a recognised University; and (b) A Post-graduate Degree or Diploma in any of the above fields or in Public Administration/Management of a recognised Institution/University or its equivalent.

Experience

(a) A minimum of 8 years of relevant Administrative/Teaching or Research experience preferably in a University or a Government Educational or Research Institution.

(b) The candidate should have sound knowledge of concepts in Management and Human Resource Development.

Preference will be given to the candidates who have experience in conducting training programmes/work study/office work simplification or computer system for information processing.

Senior Technical Assistant : (i) Post-graduate with second class, and three years' experience of representing data with Cartographic techniques. (ii) Experience in providing Audio-Visual support in training programmes.

Technical Assistant : Graduate in Science. Experience in Laboratory Techniques of the subject.

Technician Grade VII (Glass Blowing) : Matric with two years experience in Glass Blowing. The candidate should have handled various Glass Blowing equipments.

Laboratory Attendant : Should have passed the Matriculation or an equivalent examination with Science subjects: **Desirable**—Should have worked in a Laboratory.

(i) The prescribed application forms can be had from Room No. 205, Estab. IV Section, Administrative Block of the University from 9 30 a.m. to 12.30 p.m and 2.00 p.m. to 5.00 p.m. either personally or by sending a self-addressed envelope (size 13 cm × 28 cm) with postage stamps worth Rs. 6.00/-.

(ii) The candidates will have to produce original documents relating to their age, qualifications, experience. etc. at the time of interview.

(iii) Persons already in service in a Government/Semi-Government/Government Aided Organization should apply through proper channel.

(iv) Applications (separate for each post) accompanied by attested copies of Degree, other certificates, marksheets etc. should be addressed to the Registrar, University of Delhi, Delhi-110007. Applications for all other posts marked asterik(*) should be sent directly to the Head of the Department/Centre/Unit concerned. The last date prescribed for receipt of the application is **20.1.1989**.

(v) (1) Canvassing in any form by/on behalf of the candidate will disqualify. (2) The University reserves the right not to fill up any of the vacancies advertised if the circumstances so warrant.

Madan Mohan
REGISTRAR

9 JAN 1989
C. F. T. R. I., MYSO

UNIVERSITY NEWS

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Editor :
SUTINDER SINGH

Role of the University System in NLM

L. Mishra*

1. Introduction

The programme of action to operationalise the national policy of education—1986 envisages the Mass Programme of Functional Literacy (MPFL) with a marked shift to the national programme of adult education from the present centre based approach on a limited scale to a mass programme by involving youth, teachers, students, workers, universities, colleges, schools, trade unions, panchayati raj agencies, voluntary agencies, other representative organisations of people and individuals.

2. Why a Mass Programme

It has been seen that over the years since introduction of the national adult education programme on 2nd Octoder, 1978, there has been a progressive increase in the number of adult education projects, number of centres, enrolment of adult learners and also outlay. Despite all possible sincere efforts however, the coverage under the programme has not been found to be appreciable; besides, the gains from the implementation of the programme over a period of 10 years in terms of retention of literacy skills have been slow and marginal. The gains achieved in literacy (from 60 million persons in 1951, we have succeeded in making 247 million literate in 1981) have been more than neutralised on account of increase in the rate of population growth on the one hand and large scale drop outs and relapse into illiteracy of the neo-literates both in the formal as well as in the non-formal streams on the other. Today we are confronted with the gigantic task of making 437 million illiterates in all the age groups and 110 million adult illiterates in 15-35 age group literate. Evidently, it is not possible to achieve this objective entirely through a centre based approach on account of paucity of resources—human, material and financial. Keeping these basic limitations in view, a new thrust and priority has been given in the 7th Plan to involve students on a mass scale for the removal of illiteracy. To begin with, the Mass Programme of Functional Literacy was launched on 1st May, 1986 by involving NSS and other students in colleges and universities on the principle of "Each One Teach One". It was decided that 35% of the total allocation of NSS students made to the universities would be involved in the adult education while in respect of NCC at least 25% of the cadet strength would act as volunteers in the scheme. Starting on a modest scale of 2 lakh student volunteers in 1986, it has been decided that during 1988-1989, 3.50 lakh NSS students, 1.50 lakh other students and 0.75 lakhs cadets will be involved in MPFL.

3. Components of the Scheme

Briefly stated, the MPFL with the involvement of student volunteers implies the following :

— Motivation and mobilisation of student volunteers ;

— Identification of student volunteers;

[Paper presented at the 63rd Annual Meeting of AIU held on December 5-7, 1988]

**Joint Secretary (AE) & Director General (NLM), Dept. of Education, Ministry of Human Resource Development, Govt. of India.*

- Identification of illiterate persons in the age group 15-35 and their enrolment by the student volunteers;
- Production and distribution of teaching-learning materials i.e. Literacy kits by the State Resource Centre to the student volunteers through the universities/colleges;
- Training of Master Trainers such as Programme Coordinators/Programme Officers;
- Training of student volunteers by the master trainers;
- Imparting functional literacy to adult learners either in the same village/locality from which the student volunteers come;
- Monitoring of the programme from the student volunteers by the programme coordinators and DAEO;
- Coordination with other departments / agencies who will be concerned with the implementation of MPFL;
- Media support to the programme;
- Arrangements regarding giving away of certificate to the student volunteers and weightage to these certificates;
- Arrangements for post literacy activities for MPFL neo-literates;
- Evaluation of MPFL through Institutions of Social Science & Research.

4. Experience of Implementation of MPFL with Involvement of University and College Students

The MPFL with the involvement of university and college students is on the ground over a period of more than 2 years. During this period the actual implementation of the programme has been evaluated by two State Resource Centres, namely, Rajasthan Adult Education Association, Jaipur and Bharatiya Grameen Mahila Sangh, Indore. Both the evaluation study reports have indicated a number of plus and minus points in the implementation of MPFL. These are briefly stated below :

Rajasthan : Plus Points

(i) There has been a progressive increase in the number of volunteers and they have taken part in the programme with lot of sincerity and enthusiasm.

(ii) The programme was commenced in time and all preparations have been completed in time.

(iii) Most of the Programme Coordinators are young, have been associated with the programme from the beginning, are committed and would like to retain their interest in future.

(iv) Most of the volunteers received literacy kits in time and found the kits well visualised, well illustrated, intelligible and useful.

(v) By and large the coordinators were able to oversee the work of volunteers in the field. This improved the volunteers ability and confidence in the programme. It improved the mobility and openness of the programme and also helped in environment building.

(vi) In addition to imparting the functional literacy, the programme helped in launching campaigns for cleanliness, protection of environment and other items of constructive work. It also helped in arousing consciousness of the women who are tied up to the Parda system and helped them in improving their self-confidence and self-image. It aroused the consciousness of the parents for sending their children to the school.

Minus Points

(i) Two third of the volunteers are involved in the programme for the first time and majority of them were boys (only 13% were girls).

(ii) The duration of the training for the Programme Coordinators (3 days as now) was found to be too short. It was felt that not only duration but the contents of the training were also inadequate.

(iii) There was a clash between training schedule and timings of the examination for which all volunteers could not avail of the training.

(iv) About 70% of the kits supplied were utilised and 30% kits were not utilised.

(v) Motivating the adult learner is the most difficult task for the volunteer. Advanced age, hard manual labour for the whole day, lack of time and freedom, inability to perceive the need for literacy are some of the constraints which affect motivation. Similarly, irregularity of timing, poor light and hence unattractive environment also contribute to lack of motivation of the learner.

(vi) Poverty, drought and scarcity conditions in most parts of the state, general social environment based on the Parda system, superstitions lack of space, non-availability of kerosene in the village, change of place of adults due to migration, are some of the important factors which have contributed poor implementation of the programme.

Madhya Pradesh : Plus Points

(i) There was a general satisfaction among the student volunteers regarding the quality of the literacy kits, its content and usefulness.

(ii) In few cases, outstanding student volunteers did succeed in imparting literacy within 150 hours to adult learners in the 15-20 age group.

(iii) In few cases where the learners' participation was regular, they could make satisfactory progress in reading, writing and numeracy.

Minus Points

(i) The attendance of the Master Trainers to the training organised for them was not cent percent. Of 552 officers proposed for the Master Trainers training, 465 officers actually participated.

(ii) Barring a few colleges, the training of the student volunteers was overlooked by the Master Trainers and Programme Officers.

(iii) Barring a few, no District Adult Education Officer or Project Officer was associated with the training as expected.

(iv) A number of volunteers didn't give any information about the training received by them. This indicates lack of motivation amongst the volunteers and their indifference towards the programme.

(v) The Programme Officers didn't do justice to the task of selecting the right type of volunteers. They failed to motivate the volunteers after selection. The learners cannot be motivated unless the student volunteers are fully motivated.

(vi) After the commencement of the programme either the learners or the volunteers dropped out. The participation of the learners as well as of volunteers was most irregular. In a group of 411 volunteers, the drop out was recorded 49% which is more than 25% drop out in the centre based adult education activities in the state.

(vii) On the spot investigation in one university, having both rural and urban jurisdiction, revealed that student volunteers enrolled adult learners who were already the clientele of the centre based adult education programme.

(viii) By and large, no proper system of identification of adult learners by the volunteers was followed. The Programme Officers did not attach much importance to this component of their work.

(ix) The student volunteers could not cover even 50% of the curriculum prescribed for attainment of basic literacy.

(x) The information study for evaluation by the learner which was supplied to the functionaries was never used. The Programme Officers didn't pay any attention to this important aspect of monitoring and for evaluation of learning outcome of the programme on dependable data.

(xi) A large number of literacy kits which were supplied by the State Resource Centre are still lying in universities/colleges, student volunteers and office of the DAEOs. The number of kits supplied was far in excess of the actual need.

(xii) There was no effort to link the programme with the development activities run by different development functionaries in a particular area.

In light of the above deficiencies and short comings, the following corrective measures could be considered :

1. Production & Distribution of Literacy Kits

It is desirable that the requirement of literacy kits in respect of different NSS, non-NSS and NCC units in the colleges/universities for a particular year is correctly assessed in advance and intimated to the SRC for production. As lot of time is involved in despatch of literacy kits by post, it may be desirable if the kits are distributed to the Programme Coordinators at the time of their training in the State Resource Centre. The Programme Coordinators in turn could distribute the kits to the programme officers and the volunteers. On no account, the kits should be produced in excess of the actual requirement. The university/college authorities should also ensure that the number of kits supplied to them are actually utilised and are not allowed to go waste.

2. Training of Master Trainers

The SRCs are required to organise a minimum of one day training for Master Trainers such as NSS Coordinators, heads of universities and college departments of adult and continuing education, NSS Programme Officers, Training Major Deputy/Assistant Programme Advisers, etc. The SRC should make it a point to send intimation about training of the master trainers to the universities and colleges in time. To make training more attractive and effective, video films and other electronic training media should be utilised. The training schedule should be worked out sufficiently in advance keeping in view the convenience of master trainers.

3. Training of Student Volunteers

Since a large number of student volunteers are to be covered it is imperative that a detailed training schedule is drawn up by the master trainers in advance so that they can take up the orientation of the student volunteers as soon as they have received the training at the SRC. Since the student volunteers are otherwise pre-occupied, it should be ensured that the training schedule does not clash with their examination schedule. Besides, since the most of the student volunteers have reached the desired level of educational enrichment, the training should be imparted to them in a non-formal and flexible manner which is different from a classroom lecture method. The DAEO and Project Officers of the RFLPs and SAEPs should also be associated with the training of student volunteers. To make the training attractive and effective, the video films and electronic media should be utilised, wherever possible.

4. Identification of Student Volunteers

This is an extremely difficult process and will have to be attended to with lot of imagination and care. This is more so on account of the fact that all students are not endowed with the same expertise and skill, while some students are capable of imparting functional literacy, some others may be in a position to provide some support services. Both these aspects should be attended to at the time of identification of the volunteers as also at the time of training the volunteers.

5. Identification of Adult Learners

Every student volunteer participating in MPFL is required to identify on his/her own 2-5 learners in the vicinity. The learners may be his/her parents or illiterate members of his/her family, neighbours, domestic servants, hawkers, rickshaw-pullers, construction workers, persons staying in slums, porters, coolies, etc. As literacy rate among the women, scheduled castes and scheduled tribes, labourers who migrate from rural to urban areas and other weaker sections of the society is very low, priority should be given to these groups by students/instructors while identifying the learners. Adult illiterates who have to be psychologically prepared and motivated by paying due regard to their age, occupation and time constraints, family situation, etc. The learners must be made to realise as what literacy means to them and must be convinced that such efforts and sacrifices as they make will be worthwhile. This task will have to be performed through slides, films, nukkad nataks, puppet shows and discussion with the local community leaders. While selecting adult learner, the student volunteer should ensure that the illiterate person has not been enrolled in any other existing programme of adult education. This is with a view to avoiding duplication.

6. Media Coverage and Support

In order that mass literacy campaign with the involvement of students is meaningful, intensive media coverage and support must be ensured. The features and stories on radio, press and spots in Doordarshan should regularly and continuously appear at a stretch when the MPFL is in operation. The success stories of student volunteers, Age—no barrier to learning and such other like stories (as in Angootha Chaap) could greatly help to remove fads, taboos and prejudices against literacy and learning.

7. Monitoring

This has been one of the weakest areas of MPFL. The quantitative aspect of monitoring was expected to be looked after by the DAEO and NSS cells in colleges and universities The qualitative aspect was the responsibility of the institution as a whole. Unfortunately, however, due to non-submission of the report by the student volunteers and inadequate training about evaluation of the learning outcome, enough dependable data has not been forthcoming about actual imparting of functional literacy, number of adult learners enrolled and number of adult learners made literate. This aspect will, therefore, have to receive much more serious attention that what it has received so far. The accuracy and authenticity of the data needs to be thoroughly cross checked by the Principal/Programme Officers at the college level. Programme Coordinator of the NSS at the university level and the DAEO at the district level.

8. Post Literacy and Continuing Education

This is yet another missing link of MPFL. The literacy kits which are being produced by the SRC for the MPFL do not contain any material on post literacy and continuing education. It is imperative that bulletins are published by the SRC to provide post-literacy services to neo literates. Some of these bulletins could be on health, hygiene, sanitation, protection and conservation of environment, women's equality and empowerment, inculcation of scientific temper, etc.

9. Evaluation

The two impact evaluation studies conducted by SRC, Rajasthan and MP have brought out a number of important issues pertaining to implementation of MPFL in these two states. It is necessary that such process be carried further and impact evaluation studies be taken up for other SRCs in respect of the remaining states. The evaluation should concern these : (a) quality of literacy kits, (b) training of master trainers and volunteers, (c) identification of volunteers, (d) actual level of achievement attained by the learner, etc. In case SRCs are not in a position to take up the study, other external evaluation agencies could be identified for this purpose.

10. Incentives to Teachers as well as Volunteers

The existing system of certification for the volunteer and lack of any recognition of the efforts made by the teacher as a master trainer by way of advancement of career have been important demotivating factors. The University Grants Commission which is in the process of designing a suitable system of institutional and individual incentives may, therefore, keep the above two important aspects in mind. Additionally, a system may be designed by which it should be possible to accord public recognition to volunteers as well as teachers for their outstanding contribution in the field of MPFL.

11. Perspective Plan for the Future

There are at present 140 universities including institutions which are deemed to be universities, 5500 colleges (mostly in the faculties of art, science and commerce) of which nearly 2500 are in rural areas of semi-urban areas, 3.5 million students and about 0.2 million teachers in the university system. 92 universities have Departments of Adult & Continuing Education who are implementing the centre based programme for quite some time. In all about 25000 adult education centres are reported to have been sanctioned in their favour by the UGC, although it is not known as to how many of them are operational. Of late, there has been a new awakening in the universities, colleges and schools which is evident from the involvement of large number of teachers and students in the mass programme of functional literacy. In the light of this awakening, it is a point for consideration as to whether the centre based programme and the individualised mass programme should be allowed to continue side by side or we should go in for substitution of the one by the other. Instances of duplication by way of enrolment of the same learner by the centre based programme as well as by MPFL volunteer have been reported. Such duplication could be avoided if we go in for adoption of an integrated area based approach in which either the centre based programme or the MPFL is allowed to operate. Keeping in view the bright prospects of involvement of large number of students and teachers in the MPFL in the near future, it may be desirable to have a second look at the centre based programme being run by the universities and allow the same to be gradually replaced by the individualised mass programme. This is, however, a point for consideration.

The second important point for consideration is the linkage of basic literacy with Post Literacy & Continuing Education in the University system. We have so far not established any effective linkage. We may, therefore, have to go in for institutionalising the framework of Jan Shikshan Nilayams in the University system in a big way. □

UNIVERSITY NEWS

A Weekly Chronicle of Higher Education

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Development of Higher Education

Issues Related to its Planning

V.P. Garg*

This article brings into focus major issues related to planning aspect of higher education in India. The issues have been identified and analysed in the context of past development of higher education during the four decades of planning in India. Issues address themselves for future strategies of development with particular reference to access to higher education—short-term and long-term planning strategies at the national level.

I. Development of Higher Education: Quantitative Indicators

Post independence period is considered a chequered period so far the development of higher education is considered. We had 155 Universities (excluding Institutions of National Importance); 6040 colleges and 36,81,870 students on rolls on 31st March, 1987[1] as compared to 21 Universities; 496 colleges and 200 thousands students on rolls at the time of independence. These universities and colleges have around 2.34 lakhs teaching staff and are producing around 7,500 Ph.D's annually. Undoubtedly, this development profile provides an encouraging scenario of unprecedented growth and development in higher education. But a serious analysis of this growth profile reveals something more to ponder and plan.

II. Considerations for Social Equity

The development of higher education has come to such a cross road where new directions are badly needed. There are vital issues which, must envision careful planning. These issues relate to social equity; age-cohort coverage; quality aspect; the social, cultural and humanistic aspects. For elaboration, we would say that the enrolment of the level of higher education as a proportion of the relevant age-cohort (viz. 17-23 years) is still low in India as compared to other developed countries. The enrolment percentage of 17-23 age-cohort population is low as revealed by the Third All India Educational Survey of Higher Education. (UGC. 1977, p. 66). For example, this percentage was 4.62 in Maharashtra; 3.75 in Jammu and Kashmir; 3.00 in Madhya Pradesh; 2.28 in Assam; 2.6 in Andhra Pradesh[2]. It is to be further noted that concentration of enrolment is in big cities and economically better off regions leaving a hiatus of even-development.

III. Higher Education and Women

Again women enrolment in comparison to men leaves much to be desired. There were 44 women against 100 men enrolled for higher education. The percentage enrolment of women in the total enrolment was 30.6. There were only 771 women colleges in the total of 6040 colleges.

IV. Quantity vs Quality Dilemma

> "The development of higher education in India thus faces the challenge of quantity versus quality and a strategy has to be evolved to arrive at an acceptable balance between the two demands"[2] observes the University Grants Commission in its annual report for the year 1986-87.

Particularly this challenge is to be viewed from development aspect of affiliated colleges in the country. These colleges to a large extent lack the so-called modicum of facilities by way of basic infrastructure leaving apart their curriculum transactions. But at the same time, these colleges show 87.7 per cent of the total enrolment at the graduate level; 56.5 per cent at the post-graduate level; 14.9 per cent at the research level and 43.2 per cent at the diploma/certificate level.

The position of these colleges have been examined by various Commissions and Committees. In recent years, University Grants Commission has put its efforts to regulate the growth of higher education as well as the establishment of colleges. But the situation has not changed for the better. Between 1982-83 and 1986-87, the total number of colleges in the country increased by 100%, of this, six states shared as much as 811 colleges : Maharashtra (246); Bihar (188); Karnataka (112); Madhya Pradesh (101); Andhra Pradesh (86); and Orissa (78).

Further, it may be noted that increase in the number of colleges of arts, science and commerce was 672 out of 1001 colleges (67 per cent). This trend worsens the situation all the more as it does not match with the genuine needs for trained manpower in the country. We know it well that unemployment of graduates from arts, science and commerce is acute.

V. The Social, Cultural and Humanistic Aspects

Besides issue of social equity, the social, cultural and humanistic aspects of education deserve considerations for provision of access to higher education so necessary and desirable to those who wish to gain

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a degree/diploma. The concept of life-long education or recurrent-education or further education falls under this category. It is simply because the social, cultural and humanistic aspects are also considered as concommitant factors besides the economic aspects in the determination of demand for higher education. Open University System; Distance Education through correspondence education has been brought into the system of higher education as an 'avenue' on social, cultural and humanistic considerations. Today, there are 35 Universities in India which provide degree and postgraduate courses in 'general education' through correspondence education. Besides, two open Universities have started various types of courses to meet this new emerging demand for higher education.

VI. Concern for Excellence and Relevance

U.G.C. has shown equal concern for identification of priorities and regional needs, and above all, determination of relevance and excellence in higher education. Each aspect has to be examined on its merits because it is equally necessary to seek congruence rather moving in contradictory positions. While identifying priorities, it may be quite possible that we have considerations of such priorities which have a national bearing but run counter from the standpoint of regional needs. Surprisingly, same could be the case otherwise too. At least, this is applicable in two areas viz (i) Financing of Higher Education, and (ii) Curriculum Development.

Determination of relevance and excellence poses a serious challenge. This is particularly in Distance/Correspondence Education area. The objectives of such courses is to provide (a) alternative system of delivery in higher education; (b) to bring equalization of opportunity by facilities in backward regions.

Obviously, the relevance of this type of programme rests in social and humanistic considerations. Relating and reading the relevance of this programme with the paradigm of excellence is not only a misnomer particularly when its compatability is sought with a full-time regular course but irrational too. We know it well that excellence in Distance Education or Correspondence Education is constrained by its philosophy and objects. However, providing a sound footing and creditability to this programme, it will be necessary that institutions which operate such courses should ensure quality and regularity of supply of instructional material for home study; arrangement of personal contact programmes, student-responses; infrastructural support like library facilities; study-centres; use of mass media and above all cost effectiveness.

There arise some important questions which should address to delicate issues of excellence and relevance in Distance/Correspondence Education when these questions are examined against social and humanistic aspects—the ideological setting for such courses. Who are the clientele of Distance/Correspondence Education? What is their academic and socio-economic background? What type of admission policies will be followed in their case? What type of expectations this group will raise after graduating a particular course? What long-term issues are involved under such a programme? Again excellence in higher education depends upon so many facts viz: standards of elementary and higher secondary education, admission policies in general and intra and inter-institutions in particular. This all relates to selection procedures before entry to higher education. Excellence is further constrained by such considerations as drop-outs; wastage, in-efficiency in the process of system. It is clear that with the greater heterogenity of the student population due to diverse socio-economic, geo-political backgrounds of students, modes of attendance, etc. pose a complex situation. So is the case of 'delivery system' in different institutions since infrastructural and instructional support differs from institution to institution. This definitely has a bearing upon teaching-learning process in each institution.

VII. Tasks Ahead

It is not denying the fact that expansion of higher education is bound to occur—though its pace may be slowed down by a process of diversification at the secondary stage or through new modes of delievery system. (viz: Vocationalization of education at Secondary School level; open-university system or Distance Education). But ultimately, Indian Higher Education system has to face new challenges and to seek new directions under hard-pressed situations. There is a proposal to establish an All India Council of Higher Education*. The aims and functions and its statutory position is yet to be in the formative stage. However, it has been a considered view that this Council is likely to cover up matters in higher education in its totality. Such a move is no doubt a positive one.

Without going into institutional frame, it would be necessary here to spell out areas of concern which should be attended to for planning development strategies in higher education. These strategies should be worked out on short-term and long-term planned perspective.

VIII. Thrust Areas for Planning and Seeking New Directions

(a) *Access to Higher Education*: Basic approach relates to access to higher education. As expansion has to be a continuous affair it is necessary to formulate development strategies which address the quantitative expansion of higher education. These strategies should take into account the growth rate of enrolment by stages and faculties; admission policies and the institutional-build-up, linkage between secondary and post-secondary stage; growing impact of non-conventional institutions and enrolment position in them.

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*As resolved in Central Advisory Board of Education Meeting recently held in New Delhi.

(b) *Long-term planning strategies* : Long-term planning strategies are to be evolved in the regulation of 'aggregate demand' and allocation of resources in higher education with a view to obtain balanced supply of manpower. For this purpose, a detailed but a unified and judicious matching pattern of 'demand matrices' have to be worked out which *inter-alia* accommodates pressures of 'demand and supply' functions in higher education, such accounts are possible and could be developed on the past-trends and the future requirements. Such a model would take due consideration and weightage of the wider range and type of clientele and courses—conventional and non-conventional. It would further imply that adjustments have to be made in terms of regional aspirations and national development strategies.

(c) *The structuring of courses with an outlook on their social relevance and the world of work*: It is still a debatable issue of academics as what should be the role and functions of higher education. In fast changing world, needs of societies will always be at variance hence it would invariably a poser to academic community to face and pace with this. New demands at cognitive skills—development level will set the ball rolling. Nevertheless, academics have to face these realities and live upto the social expectations and ethos. The structuring and reorganisation of University-Courses is an exercise of constant nature so as to suit to social relevance and to the requirements of 'world of work'.

(d) *Admissions and the Financing of Higher Education* : Government policies on higher education, embody a variety of objectives : Social, political, economic and which are further viewed in terms of efficiency and equity criteria. Similarly, policy of admissions and financing of higher education are formulated and implemented in relation to these objectives. Admissions—sufficient places and selection procedures in admissions; diversity of institutions to satisfy demand for skilled manpower, etc. call for choices in different methods of financing higher education. So elasticities in admissions and methods of financing would indicate the social choice and objectives in higher education. It is simply because such elasticities control and promote admissions and regulate allocation of resources for the purpose. A long-term strategies, of planning thus calls forth an explicit resolution of government policy objectives on admissions and the financing of higher education. It is against this context that for purpose of long-term planning, it is desired that Government should formulate a well considered policy of financing higher education which justify considerations of social justice and equity; academic relevance and creditability of a course, manpower requirements and excellence, etc.

The crux of the problem is : what should be the national scheme of admissions in higher education which could cut across such sensibilities ? It is a crucial issue no doubt but warrants a careful planning.

IX. Educational Planning in relation to Economic Planning

Uptil now, discussion has been unilateral i.e. development of higher education and its planning. But any exercise on development strategies for higher education will be counter-productive if we fail to integrate it with the economic planning of the national economy, The 'World of Work' and generation of employment opportunities provide the 'Call letters' and hence the 'decidration' of the world of education. In other words, the success of educational planning depends much on the success of economic planning and further where they have landed and what they have gathered in the prosperity-basket.

X. In Conclusion

Development of Higher Education in India has by all means and measures moved faster and has provided manpower ranked third in the world. But we have come on a crossing where new directions have to be sought with a careful planning. The need is to increase the employment and social relevance of university graduates. □

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THE EDUCATIONAL PROCESS

"Sri Sathya Sai Institute of Higher Learning under the guidance of its Revered Chancellor imparts integral education combining pursuit of academic excellence, knowledge and wisdom, with duty and devotion, illumination through purity and meditation, healthfulness through yoga, social and national awareness through field and project works and sense of unity and world brotherhood through living in close contact with seekers of truth from all over the world" observed Shri K. Brahmananda Reddy, Governor of Maharashtra in his address to the 7th Convocation of Sri Sathya Sai Institute of Higher Learning on 22 November, 1988.

Convocation

I deem it a great blessing and honour to be invited by the Revered Chancellor Bhagwan Sri Sathya Sai Baba to deliver the 7th Convocation Address on the eve of Bhagwan's 63rd birthday. The main purpose of my coming here is to pay my respects to Baba on his birthday and to seek his blessings, in the divine value of which, I have unflagging faith and reverence. My delivering the Convocation Address is merely an act of humble obedience to the command of Baba in whose presence I do not consider myself competent to give words of wisdom and advice expected on such an occasion. But then the rationale of this Convocation is as unique as the Institute itself. It can be better expressed in the words of Revered Chancellor, "Only in the Institute here can be witnessed the emphasis on the divinity inherent in man. In the old days, when the pupils completed their education tenure in the ashram of the guru and were about to enter on the life of a grihastha (householder), the preceptor gave them a parting message to serve them as guidelines for their wordly and spiritual good. That ceremony is observed today as a Convocation." Emboldened by this definition of Convocation I venture to say a few words with the blessings of Baba.

My student friends, you should be proud of being the alumni of this great institution. Sri Sathya Sai Institute of Higher Learning under the guidance of its Revered Chancellor imparts integral education combining pursuit of academic excellence, knowledge and wisdom, with duty and devotion, illumination through purity and meditation, healthfulness through yoga, social and national awareness through field and project works and sense of unity and world brotherhood through living in close contact with seekers of truth from all over the world. In the words of the founder, the Revered Chancellor, the Institute "is intent on providing, through the educational process, the inspiration and the instruction to ensure a deep appreciation of the knowledge and wisdom accumulated through the centuries and the genuine experience of the ideals of Sathya, Dharma, Santhi, Prema and Ahimsa." The major focus is, development of correct attitudes and values in students which will enable them to strive for perfection in physical, intellectual, emotional, psychic and spiritual parts of their personality thereby shaping them to be good leaders in society.

The very rural setting of the Institute is congenial to the development of the individual and his vision through communion with nature. In Tagore's words, "If a man lives alone on the bank of a river or in free surroundings, he develops a free vision. There is nothing more beautiful or greater than doing the ordinary things of daily life with ease and spontaneity. There is unprecedented peace and there is beauty in nature because one does not transgress the limit of the other." The late Indiraji quoting these words of Gurudev wished that "we should adopt a system of education which is free yet committed, traditional yet progressive, reflecting our culture, yet scientific. It should be imbued with a new vision and a new vigour," I can say with pride and happiness that Sri Sathya Sai Institute of Higher Learning has enshrined in its curriculum all the objectives set forth by the late Prime Minister and it has become a model for all educational institutions in the country.

Our Prime Minister Rajiv Gandhi has very correctly pointed out that "Every educational system needs regular upkeep, maintenance, upgradation and improvements. No system can be the same for ever. It has to adjust with times, with development, with new discoveries in technologies.............. The question we have to ask ourselves is not just whether our system is good enough to make us catch up with the most advanced countries in every field."

There is broad agreement all over, about the aims and objects of education. Education according to Gandhiji is not an end in itself but an instrument and that type of education can be called real education which helps us in the building of sound character. Swami Vivekanand termed man-making as its objective. Dr. Radhakrishnan said that "A nation is built in its educational institutions. Moral qualities are of greater value than intellectual accomplishments." But the fact remains that today education is considered as a device for churning out degrees which are passports to employment. Today's education does not teach one to think, but loads us with other's thoughts. As Henry Adam observed, "Nothing in education is so astonishing as the amount of ignorance it accumulates in the form of inert facts." The result is perpetuation of mediocrity in the field of education and development of unhealthy habits. Instead of sermonising, I shall illustrate this with the help of two stories. The first is by Sir David Nicolson :

"A mother was having breakfast with her son when he looked up from his porridge and said, 'I'm not going to school today, Mother,' to which she replied, with surprise, 'And why not ?'

'I'll give you three good reasons for not going. First, I don't like the boys, secondly, they don't like me, and thirdly, it's a lousy school anyway.'

At this the mother looked at him reprovingly and said, I'll give you two good reasons why you are going to school.

Firstly, you are forty-seven years of age, and secondly, you are the Headmaster."

Now the second anecdote. "The wife of the great physicist, Robert A. Millikan, happened to hear her maid answer the telephone. "Yes, this is where Dr. Millikan lives, but he's not the kind of doctor that does anybody any good."

While it may be difficult to delink education from employment, it should be possible to ensure that education is not for employment alone. As Robert Penn Warren said: "Education is the business of teaching you how to live, not just how to make a living." This according to our Prime Minister Rajiv Gandhi is "the differentiation that we want to make between the system that has been prevailing in India and the system that we would like to bring in."

Education, in addition, has to promote and develop certain basic value systems. Social, economic and political justice, liberty of thought and expression, equality of status and opportunity, dignity of individual, are all values that our Constitution seeks to secure for all our citizens. If these values have to become real, they should be living and growing in our lives. It is not only the individual's value system that is important. What we need is a value system shared by all. We are held together as a nation by values, beliefs and attitudes that all of us share. It is this bond of shared ideals that provides cohesion and strength to our society, despite all the tension that life involves. It is this strength that helps us to rise above the conflicts that bedevil the society which gives our nation its unity, integrity and capacity to endure. As Indira Gandhi observed, "Education does not mean only refining manual, vocational and intellectual skills. Essentially, it is a process of deepening the spirit." Rajivji also shared the same view when he said, "It (education) must be the key to maintaining an inherent spirituality that has been a part of India for thousands of years. It must maintain our Indianness. It must be our main defence against the deluge of materialism and pragmatism that is being thrust on us by the media and by various forces across the world."

The New Education Policy announced by Government seeks to remove the lacunae in the present system and incorporate the ideals mentioned earlier and bring good, value-based education to the weakest and poorest sections of the society.

All the Sri Sathya Sai Schools and Colleges are already preparing students to become responsible citizens of the country by inculcating a profound sense of Indianness, self discipline and selflessness, sense of service to follow human beings, development of character and correct attitudes necessary for the full development of individual, sense of unity and integrity, faith in God and sense of spirituality and divinity inherent in man. The Code of Honour and Conduct is a cherished tradition of the Institute. Students of the Institute hailing from all parts of the country and belonging to all religions conduct themselves in the light of highest principles of integrity and participate in cultural programmes and festivals of all religions. They possess humility, reverence, compassion, forbearance, spirit of sacrifice, and sense-control qualities which are the outcome of true education. The highest standards of value-based education in all Sri Sathya Sai Institutions constitute an example worthy of emulation all over the country and can serve as guide posts while implementing the New Education Policy.

The credit for this path breaking experiment undoubtedly goes to the inspiring guidance of Sri Sathya Sai Baba. The leadership provided by Dr. Saraf to the Sathya Sai Institutions also deserves special mention. I am sure that my young friends who pass out of this noble Institute will keep the flag of value-based education flying high and uphold the ideal of public good. I am also sure that these young people will reach message of true education imbibed here, to every nook and corner of the country and help in character building and increased prosperity of the nation. To recall the words of German reformer Martin Luther, "The prosperity of a country depends not on its abundance of revenues or on the strength of its fortifications, but on its men of education, enlightenment and character." I am sure that all of you who are lucky to be the products of this Institute will light up the country with the glow of true education, enlightenment and character following the path laid by Bhagwan Sathya Sai Baba.

Friends, I shall now conclude my address by reminding you of the exhortation by William Penn :

"I expect to pass through life but once. If therefore, there be any kindness I can show, or any good thing I can do to any fellow-being, let me do it now, and do not defer or neglect it, as I shall not pass this way again." □

PURPOSES OF EDUCATION

Delivering the Benedictory Address, Bhagawan Sri Sathya Sai Baba, Revered Chancellor of Sri Sathya Sai Institute of Higher Learning, called for inculcating discipline, culture and humility.

I

OBJECTIVES OF EDUCATION

Education is an ornament for man. It is his secret wealth. It confers prosperity and fame. It is the teacher of teachers. It is one's unfailing kinsman in foreign travel. It secures the respect of rulers more than wealth.

Education is the basis for leading a purposeful life in the physical world, in the realm of the mind and in society. It equips one with the mental strength and steadiness to face the challenges of life. It enables one to understand the myriad manifestations in nature. It is only when one understands the power of his mind that he can recognise the relationship between the world and society. Real education should enable one to realise that mankind is one family. It should help one to experience the unifying forces in society.

Unfortunately, education today is not promoting these objectives. We have no lack of intelligent men in the world today. There are any number of scientists. It is because the intelligentsia and the scientists have not been educated on right lines that the world is plunged in chaos and disorder. Education today is concerned mainly with satisfying the senses and developing intellectual skills. It ignores the development of virtuous qualities. Despite the committees and commissions set up by the Government to suggest reforms in education, no resolute efforts have been made to effect the necessary reforms. The main reason for this failure is the lack of unity after the achievement of freedom. All the ills the nation is suffering from are due to the absence of unity and the preoccupation with aphemeral objectives. There is nothing that cannot be achieved through unity.

Education should promote discrimination and humility. The quantitative explosion in the number of educational institutions—schools, colleges and universities—has been accompanied by a corresponding decline in the quality of education. To have no respect for your betters, to be ungrateful to those who have fostered you, to revile even the teacher who taught you, can this be called "progress" in education ? There is little evidence of morality in society. There is a general decline in character and conduct. Indian culture, which laid emphasis on plain living and high thinking, has been almost forgotten. Can there be anything more unfortunate for the country?

II

THE CULTURE OF INDIA

India, which achieved great heights in every cultural sphere, is today unaware of the magnitude of its greatness. Most students are not aware of even the meaning of culture. Culture refines the human spirit and makes one a complete human being. Today no attempt is made to understand the truth relating to the body, the mind and the Atma. Culture seeks to integrate the various aspects of daily life and develop a unified outlook. It should enable one to transcend the divisions of caste, creed and community and realise the divine unity that underlies the apparent diversity. Students should realise that Indian culture is not meant only for India but is meant for all mankind to reveal to the world the path to the Divine.

Today, one finds that the virtues exhibited by illiterate villagers and uneducated folk in the tribal areas are not to be seen among the educated urban population. In fact, wherever schools, courts and administrative offices have multiplied, there we witness an increase in corruption, injustice and wickedness. In seeking to lead a free and unrestrained life, people are falling a prey to the desires of their senses. Educational institutions, which should be heavens of peace and serenity, are haunted by fears of insecurity. The true aim of education is to prepare the student for a useful role in society with the halo of the knowledge he has got and for leading an ideal life.

III

SCIENCE AND TECHNOLOGY

Science and technology have made great advances in recent years and have a prominent place in education. It is true that science has helped to improve the conditions of living. But the harm it is doing outweighs the benefits. Man has lost peace of mind and the sense of security. The growth of videos, radios, television, cinemas and air travel has been stupendous. But there is no sign of any growth in "Divine Vision". With the result that daily life is becoming more precarious. Morality and justice have declined. This must be ascribed mainly to the craze for acquiring modern scientific gadgets. Many middle class people, who have moderate incomes, wish to acquire motor vehicles, TV sets and the like which they cannot afford to buy from their regular incomes This leads to corruption and bribery. Even education has become expensive and far beyond the means of middle class earners. In addition, there is the tendency to show off before others, to appear to be better off than one really is. This kind of ostentation is another cause for fall in moral standards among lawyers, doctors and other professional people. There is nothing wrong with science as such. It is the way it is used that produces bad consequences.

In the reform of the educational system, it is necessary to ensure that students learn about the right use of science. True education must enable one to realise the Self (Atma Jnana). Instead of emphasising this need, modern education creates many problems and difficulties for the students. Acquiring a small fragment of knowledge, a student gets inflated notions of himself. With this sort of conceit he develops a contempt for Bharatiya culture. This is not what true education should aim at.

IV

EDUCATION AND LIFE

Education should be divorced from job hunting. Its primary purpose should be to enable the educated person to lead an honourable and meaningful life in society. If one cannot command respect in society, of what value is his education? Education should make a man recognise his obligations to his parents and others who have made him what he is. Gratitude is a supreme virtue. If one cannot be grateful to his parents, his education is a waste.

Dear Students ! In the pursuit of your studies, you must place the interests of the nation above your personal interests. If you wish to maintain the greatness of Indian culture, you should fully understand its sacredness and sublimity. India's prosperity will last only as long as its culture is preserved. India will cease to be India if its culture is lost. Consider this hoary culture as your life breath and as the blood flowing in your veins. The receiving of a degree is not the end of education. Your education will be worthwhile only when you lead exemplary lives in the service of society.

V

DUTY OF THE EDUCATED

In ancient days high value was attached to education and the

UGC Warning Against Fake Institute

The University Grants Commission (UGC) is reported to have warned the public against the fake institute "Commercial University Limited" which has been awarding degrees and certificates. The statement issued by UGC states:

"It has come to the notice of the UGC that the so-called self-styled institution 'Commercial University Limited, Post Office Building near Golcha Cinema, Darya Ganj, New Delhi-110002 is awarding B. Com degree and certificate by charging Rs. 2,000 or Rs. 3,000 for such degrees.

All concerned are informed that the so-called 'Commercial University Limited' is neither a university established by a Central or a State Act nor deemed to be university under Section 3 of the UGC Act 1956 and as such it is not empowered to award degrees in terms of the provisions contained under Section 22 of the said Act."

students led simple lives. Their clothes and their manners were dignified. Today such simplicity and dignity are not to be seen among students or teachers generally. Discipline is at a discount. More than ever it is essential for educated persons today to conduct themselves as man of honour and integrity and raise the moral level of society. Even in pursuing the spiritual path, the process should not be from Nature to Spirit but from Spirit to Nature. By seeking to master the forces of Nature through education, people tend to become subjects of nature. Live up to the Institute's motto: "Sathyam Vada: Dharmam Chara" (Speak the Truth, Be righteous). These injunctions are not properly understood. Adhering to Truth means living up to transcendental Truth which is the eternal verity that is true for all time—past, present and future. "Dharma" does not mean living as you please. The bonds of love that existed between gurus and the disciples in the past do not exist today between students and teachers. The guru considered it his duty to teach the disciple what was most beneficial for the latter and the disciple loved to render service to the guru and carry out implicitly his commands. In those days, the students were few and they received intensive instruction. Today the students are numerous and the education is diluted. Far reaching reforms are needed in the educational system today. The future progress and welfare of the nation depend upon how education is imparted. Students must be imbued with genuine patriotism. Starting with love and reverence for the parents, students should cultivate love and reverence for the Motherland. All your education must be a preparation for serving the nation.

VI

HUMAN VALUES

Broaden your vision. Cultivate the spirit of love. Being endowed with the human form, you must strive to develop human values and not stray away from the path of righteousness. Fill your minds with sublime thoughts and your hearts with divine feelings. Consider the entire society as your home. Only then you will realise genuine unity with all. Redeem your lives by revering your parents, honouring your teachers and developing a loving faith in God. In this way you can lead dedicated lives in the spirit of the injunctions of the Upanishad. Be aware of the divinity that is inherent in every being. Thereby you will grow in your own self esteem. Fill your life with joy.

Be Happy; Be Happy
Make others Happy
All will be Happy
God will be Happy

Multi Disciplinary Approach to Education in USA

Under the auspices of the Association of Indian Universities, Dr. Donald R. Gerth, President, California State University, Sacremento, USA delivered a lecture on "Multi Disciplinary Approach in Higher Education with special reference to the State of California" on December 15, 1988 at the India International Centre, New Delhi.

On access and participation, giving data in respect of enrolment in educational institutions in California with reference to the age cohort of the population, Dr. Gerth said that both the percentage of the age cohort graduating from school and the percentage of school graduates entering college and university programmes had come down over the last 20 years. At the same time the average age of the student in the higher education institutions was going up.

Making a reference to the pluralistic composition of the Society he said that at present the percentage of white and black population entering higher education was more or less the same while the percentage of Hispanic students was low. He then pointed out that the trend towards unstructured university programmes initiated after 1960's was giving way to increasing structurisation. At present in California one had to take increasingly structured general education, majors which are also getting structured and free electives.

On the concept of the Open University in USA, Dr. Gerth said that it was to aid those who had missed out higher education earlier in their lives and was not thought of as an alternative to the formal system to take care of growing numbers.

Reacting, Prof. Moonis Raza, Vice-Chancellor, University of Delhi, who presided over the function, said that structurisation was the result of the pressing demands now placed by the disciplines of physical sciences and life sciences and that of technology.

Prof. S.K. Agrawala, Secretary, Association of Indian Universities, thanked the speaker for his illuminating lecture and Prof. Moonis Raza for his thought provoking and enlivening observations. ☐

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1. Capable of teaching in English medium and candidates from non-Manipuri for the post serial No. 1 to 5. For post No. 6 is no restriction.

VI. General Information

1. Allowances are payable as per rule(s) of NIGHTINGALE EDUCATION TRUST. In addition, benefits like pension, medical facilities, leave, travel, etc. will also available as per rule(s) of NET.
2. Accommodation at the school premises will also be provided.
3. The school is located near by Loktak Hydroelectric Project and at a distance of about 46 km. from Imphal. The classees are running right from NURSERY to TEN under affiliation of the Board of Secondary Education, Manipur and future process also will continue till the school has upto class XII.
4. Retired persons and both spouse also can apply if they are qualified for the posts.

VII. How to Apply

Please apply to the PRINCIPAL, NIGHTINGALE ACADEMY, Charoikhulen-795124, Manipur alongwith the followings :

1. Applications must be typed or neatly handwritten in English with full postal address.
2. A recent passport-size photograph duly signed and affixed on the right top corner of the application.
3. Photostat copies of all certificates, marksheets and testimonials be enclosed.
4. Date of application receipt :
   Upto **31-1-1989** by hand and upto **15-2-1989** by post.

K.G. Robby
CHAIRMAN

National Workshop on Futurology at Bharathidasan University

A threeday DST sponsored National Workshop on 'FUTUROLOGY" was held at Bharathidasan University, Tiruchirapalli. In his Welcome Address Dr. S. Muthukumaran, Vice-Chancellor, Bharathidasan University, pointed out that futuristic projections being natural to mankind, a stage has now been reached for a scientific study of the future. He emphasised the need for structuring a model of the future which has all along defied a direct correlation between cause and effect.

Thiru S. Arunachalam, Hon'ble Minister of State for Industrial Development, Government of India, inaugurating the Workshop, dealt with the importance of future planning in all walks of life, especially in shaping the economy of a nation. He suggested that we should hereafter consider the future as a resource, which is rich and tangible, and approach it in a pragmatic manner. He stressed upon the vital role that the University played in advising the administrators about the trends in the future in various disciplines. He hoped that such exercises would become a part of the continuing process of modernisation as well as stabilisation of our economy.

Dr. S.C. Seth, Head, Future Studies Unit, Department of Science and Technology, Government of India, New Delhi in his keynote address traced the origin and development of the Futurology movement in the West and in India. He argued that building scenarios of the future was inevitable to the growth of a nation and that the present failures and inadequacies should be considered positively so that a realistic scene of the future can be envisaged. He too emphasised the need to consider the future as a resource which had to be utilised so that growth and prosperity can be ensured for the coming generations. He predicted that in the future the division among people will be between the "Knows" and the "Know-nots".

In the ten technical sessions in which twenty six scholarly papers were presented, the major themes discussed were : (1) India in 2000 A.D.; (2) Aspects of Perspective Planning; (3) Future Scan in Indian Education.

Delivering the valedictory address, Dr. A. Gnanam, Vice-Chancellor, University of Madras, gave a comprehensive picture of how technology was bringing about changes in quantum leaps. He highlighted the great boom that was taking place in the field of information flow and wished that people should use all this knowledge positively and take to the science of futurology seriously. Citing several interesting examples of the predictable changes in the not too distant future in working hours, ageing, genetic recombination and value systems, he warned that there will be no time to adjust and evolve as in the past. He considered the science of futurology as a very much a part of our responsibility to be dealt within the educational system.

Some important recommendations made by the workshop are :

(1) The Workshop underlines the significance of Futurology as a discipline of study at all stages of education. Steps may be taken to design curricula and prepare reading/reference materials at various levels of Primary, Secondary and Tertiary stages of education. In structuring the curricula content adequate care must be taken to make it interdisciplinary and also locally relevant. In other words, the study of Futurology must be able to inculcate in the students a futuristic view of the society and economy around them at the local/regional levels within the national framework.

(2) Besides introducing Futurology as a separate discipline of study, atleast one paper on "Future Possibilities" (in the concerned discipline) may be introduced in the existing courses of study. This paper must enable the students to have an exposure to the frontier and upcoming areas of knowledge and its applications in the concerned subject, thereby indicating the possible directions of future progress in the field.

(3) The Departments of Futurology to be established in select Universities and Colleges may, in addition to their regular programmes of teaching and research, organise extension education and short-term training programmes to the officials of development wings in the various Government Departments, corporate planners in industry and commerce and others concerned with future planning; these training programmes shall include futuristic approaches and methodologies with a view to give a long-term orientation to the entire development process.

(4) The non-formal education programmes including Adult Education and Mass Media must aim at creating an awareness among the masses of the future socio-economic problems which the nation

may face in the coming two or three decades in the vital areas such as energy, environment, technology, population, health, housing.

(5) The workshop recommends that every department of the Government at the District and State levels must establish a "Future Cell" which may be entrusted with the task of drafting perspective plans for the concerned areas. This may, in turn, form the nucleus of the micro-level planning machinery proposed by the Government of India.

Wave-based Energy Plant Developed

The IIT, Madras, is setting up a Rs. 1.1 crore prototype wave energy power station on a trial basis at Vizhinjam, 15 km from Trivandrum in the sea. This project, funded by the Department of Ocean Development, is to become operational by March or April 1989 and has been designed with an installed capacity of 150 kw.

Prof. L. S. Srinath, IIT Director said that the on-site project had been taken up after research and laboratory trials at the institute. It consisted of a barrier with a wave energy conversion device that should be positioned at a depth of 10 metres under water. The barrier consists of a pre-fabricated concrete caisson with a front opening Waves entering the caisson displace air that drives an air turbine for power generation. The turbine has been designed in such a way that it rotates in a single direction when the air is pushed into and sucked in as the wave enters and recedes from the box.

Prof. Srinath noted that at Trivandrum where the project was coming up near a breakwater of a fishing harbour, the estimated cost of power generation was 75 paisa per kwh. Where it was not part of a harbour breakwater, the cost would go up to Rs. 2.20 per kwh.

Prof. V.S. Raju, coordinator, wave energy project, said the experiments and trials had gone on for five years while the Trivandrum project had been set in motion nine months ago. The construction work would be completed by January next. Besides generating power, this kind of a project, he said, had other objectives—creation of breakwaters would pave the way for marine culture and act as an anti-erosion agent. Prof. Raju said Norway was the only other country that had attempted wave energy but its location was on sea against a mountain, which was itself the barrier. Trivandrum would be the first in-sea breakwater wave energy system. The potential for wave energy on the Indian coast, he said, was 40,000 MW, and the Trivandrum-Kanyakumari coast would be the ideal location of any project.

The IIT has requested the Planning Commission to sanction Rs. 40 crores for going in for more such stations in the country during the Eighth Plan. Once power is generated by the Trivandrum station it will be synchronised with the Kerala State Electricity Board.

High Energy Physics Symposium at Madras

Prof. E.C.G. Sudarshan, Director, Institute of Mathematical Sciences (Matscience), Madras, called for integrity on the part of the scientific community in the pursuit of truth and excellence and to ensure that the scientific institutions did not suffer. He was inaugurating the ninth High Energy Physics Symposium, organised by the Department of Atomic Energy, co-sponsored by the Institute, University Grants Commission and the Indian Institute of Technology at Madras recently. He said scientists of different disciplines must contribute to the common task ahead of them. The second and third fiddles in an orchestra were important and integral to achieve harmony but they should not try to play the role of the conductor, he added.

Prof. Sudarshan traced the history of research and experiments in the field of high-energy physics, particularly the recent super-symmetry of grant-unified theories.

Prof. L. S. Srinath, Director of IIT, Madras, suggested greater interaction among various scientific organisations in Madras rather than on an individual-to-individual basis.

Over 120 papers were presented at the symposium on various aspects of theoretical and experimental advances in high-energy physics.

Philosophy of History

Prof. Sheik Ali, Vice-Chancellor, University of Goa, while delivering a lecture at the Faculty of Social Sciences, Banaras Hindu University on 'Philosophy of History' underlined the role of ideas in history and explained the importance of contingency, necessity and logic and the interplay of these factors in the presentation of historical material. He said, facts of history were as important as the approach of the author and the way he could recreate the past. Prof. Ali, in particular referred to three historians. He explained, how 'Ibn Khaldun' began by writing the history of a region and ended by making the first effort on writing universal history.

Talking of Spengler and his monumental work 'Decline of the West' he said, "this famous German historian represented the feeling of despondency generated after the First World War". Elaborating the writings of well known historian, Arnold J. Toynbee whose broad vision of civilisation and culture is well known, he said Toynbee set a new pattern not only for the later historians but also for all those who were engaged in studying social change in its widest ramifications. Prof. Ali highly appreciated the teaching of historiography as a compulsory paper at the postgraduate level. He emphasised that without the knowledge of philosophy of History the study of History would be incomplete.

The Vice-Chancellor, B.H.U., Prof. R.P. Rastogi in his presidential remarks gave his own thoughts on the problems of 'historiography'. He said that he was pleased to note that history writing was taking new form and various other branches of social sciences could gain a great insight from such efforts.

Study of Semi-Conductor Materials

Dr. V. S. Arunachalam, Scientific Adviser to the Defence Minister and Secretary, Defence Research and Development Organization said that the increasing sophistication in defence equipment in recent times is directly related to crucial breakthroughs made in the study of semi-conductor materials.

He was addressing the international conference on semi-conductor materials organised by Delhi University in collaboration with the Semi-Conductor Society. He said that the Central Defence Research Department was giving high priority to development of semi-conductor materials, like silicos and mercury cadmium telluride, which are used to manufacture mine detectors and radars.

Professor Moonis Raza, Vice-Chancellor of Delhi University, said that further advancement in science and technology could bring about an industrial revolution in India. He said that academics should not concentrate only on abstract problems, their work should also help to solve general problems of the public.

It is only recently that the Indian Government has started giving emphasis on the study of semi-conductor materials, said Professor P C. Mathur, Chairman of the Organizing Committee of the Congress. The popularity of the consumer electronic products in which semi-conductor materials are extensively used had made Indian scientists aware of their relevance, he added.

As part of the conference a four-day intensive tutorial course was also organised. One hundred and seventy-five Indian scientists, along with 40 others from foreign countries took part in the tutorials where they got an opportunity to hear experts in this field.

UGC Grant for Garhwal Varsity

The University Grants Commission (UGC) has sanctioned a grant of Rs. 200.70 lakhs to Garhwal University for implementing various programmes during the remaining period of the Seventh Plan. Of this, Rs. 100.03 lakhs has already been released.

Coaching Centre at Punjabi Varsity

The University Grants Commission (UGC) has approved a proposal of the Punjabi University to set up a coaching centre for competitive examinations for educationally backward minorities like Muslims, neo-Buddhists, etc. at Government College, Malerkotla and has extended a financial assistance of Rs. 6.50 lakh for five years for running the Centre. The Centre will provide coaching for various competitive examinations like IAS and other allied services, PCS examination, State Services examination, Bank Probationary Officers, Examination, Pre-entrance examinations for different professional courses, etc.

The UGC has also recommended the establishment of an audio-visual research centre at the University. This would enable the university to conduct the academic and research activities on modern lines in a more effective way.

Master's Course in Computer Applications

The Punjabi University has decided to run Masters' course in computer applications at the Guru Kashi Institute of Advance Studies at Dam Dama Sahib in Bathinda District. One post of Professor and two posts each of Readers have been sanctioned to run the course.

News from Agril. Varsities

Training Course for VEWs in Crop Production & Extension Methodology

The Krishi Vigyan Kendra/ Extension Training Centre, Malangpora of Sher-e-Kashmir University of Agricultural Sciences & Technology organised a 2-month training course in crop production and extension methodology for the benefit of Village Extension Workers (VEWs). The overall objective of the course was to impart need-based skill training to VEWs in raising field crops on scientific lines as well as in extension techniques involved in transfer of agriculture related technologies to the farmers.

In this refresher course more than 30 VEWs from different districts of Kashmir Division including Ladakh took part to keep themselves abreast with latest/improved extension techniques and agril. technologies.

During these two months of training, VEWs were educated and trained in the use of improved seeds, judicious use of fertilisers, integrated control of insect-pests in crops and raising of crops under adverse weather conditions. They were given skill training in agro-vocations like growing of mushroom, rearing of silkworm and cultivation of fodder round the year for animals. Besides, VEWs were also acquainted with latest extension tools and techniques for dissemination of information/transfer of technology and ultimately for adoption of innovations in the entire villages in shortest possible time, so that farmers may reap the fruits of researches. Further, VEWs were also taken around the University research stations and departmental farms, so as to show them the research work being conducted on different aspects of agriculture, horticulture, forestry, etc.

Meteorological Weather Centre at PAU

A centre for medium range weather forecasting and agrometeorological advisory service is being set up in the Department of Agricultural Meteorology of Punjab Agricultural University (PAU) to strengthen the weather service for the farmers of the State. The Union Ministry of Science and Technology is reported to have provided Rs. 14 lakhs for the purpose. The centre will be linked with the super computer being installed in the Meteorological Department, Delhi.

According to Dr. H.S. Mavi, Head of the PAU Department of Agricultural Meteorology, with the strengthening of the Meteorological Weather Centre the University will provide a seven day advisory weather service to farmers through AIR and Doordarshan. A cloud picture along with the weather forecast will be a regular part of the news bulletin at 7.30 p.m.

The Punjab State Agriculture Marketing Board and Markfed have also provided Rs. 9.3 lakh for strengthening the weather forecasting system. Under this project the latest model of a facsimile weather recorder and equipment for receiving satellite cloud pictures will be imported. The satellite ground receiving station of the PAU Meteorological Centre is already receiving cloud pictures.

Hybrid Seeds Project for KAU

The Indian Council of Agricultural Research (ICAR) is reported to have sanctioned a research project for development of hybrid seeds in vegetables and their management to the Kerala Agricultural University. The project envisages development and evaluating hybrids in bitter gourd, snake gourd and pumpkin.

News from UGC

INSAT 1-B Programme of UGC

Between 2nd January to 9th Jan., 1989 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

2.1.89

"The Open Door-Life of S.N. Bose"
"One Out of Ten Thousand"

3.1.89

"Preventing Pesticide Poisoning"
"What is Communication ? Why Study it ?"
"Oris : A Biomedical Industry"

4.1.89

"Industrial Technology"
"Cartography Interpreting Maps—II"
"Plants in our Neighbourhood—I"

5.1.89

"Logical Design"
"A Prophet of the Space—An Interview with Arthur C. Clarke—I"
"How to Read a Contemporary Poem—II"

6.1.89

"Philosophy of Science—Of More and Less—III Euclidean Geometry & Axiomatic"
"Ethnographic Film—II Panorama"

7.1.89

"Interior Decoration—I"
"Modern Art"
"Mobile by Alexander Calder"

8.1.89

No Telecast

9.1.89

"Journey to the End of the Earth"
"Nuclear Energy"

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

CURRENT DOCUMENTATION IN EDUCATION

A List of Select Articles culled from Periodicals received in the AIU Library during November, 1988

EDUCATIONAL PHILOSOPHY

Young, Frances. Educating for excellence. *British J. Ednl Studies* 36(2), 1988, 100-110.

EDUCATIONAL PSYCHOLOGY

Best, David. Education of the emotions : The rationality of feeling. *Oxford Rev Edn* 14(2), 1988, 239-49.

Boekaerts, Monique. Motivated learning : Bias in appraisals. *Intl. J. Ednl. Res.* 12(3), 1988, 267-80.

Jonathan, Ruth. The notion of giftedness. *British J. Ednl. Studies* 36(2), 1988, 111-25.

Nenniger, Peter. Cognitive and motivational orientations of U.S. and European students : Differences and structural correspondences. *Intl. J. Ednl. Res.* 12(3), 1988, 257-66.

Pratap, S. and Gupta, N.K. Unemployment and psychological well being in professional graduates. *J. Hr. Edn.* 10(3), 1985, 271-72.

EDUCATIONAL SOCIOLOGY

Adelman, Clifford. To compete or not to compete. *Ednl. Record* 69(2), 1988. 32-37.

Grant, Nigel. The education of minority and peripheral cultures : Introduction. *Comp. Edn.* 24(2), 1988, 155-66.

Kirpal, Viney. Teaching language to scheduled caste students : A humanistic approach. *J. Hr. Edn.* (Delhi) 13(1-3), 1987-88, 63-68.

Mathias, T.A. Women's education and development : The key to a brighter future in Asia. *New Frontiers Edn.* 18(3), 1988, 42-57.

Pandey, Rajendra. Student activism in British India. *J. Hr. Edn.* 11 (1 & 2, (Delhi) 1985-86, 145-55.

EDUCATIONAL POLICY AND PLANNING

Nayana Tara, S. Education : Vital component of development. *Yojana* 32(20), 1988, 9-10, 18.

Suman Chandra, K. Educational policy : Retrospect and prospect. *The Edn. Q.* XL(1), 1988, 27-30.

EDUCATIONAL ADMINISTRATION

Lieven, Michael. Authority in an educational institution. *Studies Edn. Adults* 20(2), 1988, 124-34.

Sancheti, Neelu. Institutional autonomy and inter and international networks in Indian management education. *J. Hr. Edn.* (Delhi), 13(1-3), 1987-88, 87-99.

White, George M. and Wong, Simon K.S. Interactive timetabling in universities. *Comput Edn.* 12(4), 1988, 521-29.

CURRICULUM

Goldstein, Laurence. The shaping of the curriculum. *Oxford Rev. Edn.* 14(2), 1988, 215-25.

Takwale, Ram G. Restructuring first degree courses and their link with community. *J. Hr. Edn.* Delhi 10(3), 1985, 153-68.

TEACHERS & TEACHING

Indira, R. Academic and professional career of engineering college teachers. *J. Hr. Edn.* (Delhi) 13(1-3), 1987-88, 115-20.

Kanwarjit Singh and Agyajit Singh. Impact of teaching practice on student teachers' attitudes. *Indian Ednl. Rev.* 23(1), 1988, 99-103.

Vanikar, R.V. and others. Teaching English and learning English : A study of sources of English available to first-year students at M.S. University, Baroda. *J. Hr. Edn.* (Delhi), 10(3), 1985, 243-7.

Yadav, M.S. and others. Research and teaching. *J. Hr. Edn.* (Delhi) 10(3), 1985, 177-84.

EDUCATIONAL RESEARCH

EDUCATIONAL RESEARCH in Australia 1988. *Intl. J. Ednl. Res.* 12(4), 1988, 347-451.

EDUCATIONAL TECHNOLOGY

COMPUTER SIMULATIONS as research tools. *Intl. J. Edn. Res.* 12(1), 1988, 1-102.

Megarry, Jacquetta. Hypertext and compact discs : The challenge of multi-media learning. *BJET* 19(3), 1988, 172-83.

EDUCATIONAL EVALUATION

Miller, M. David and Linn, Robert L. Invariance of item characteristic functions with variations in instructional coverage. *JEM* 25(3), 1988, 205-20.

Parthasarathy, R. and Patel, R.J. Semester system in Gujarat Agricultural University. *J. Hr. Edn.* (Delhi) 13(1-3) 1987-88, 138-46.

QUALITY OF EDUCATION indicators. *Studies Ednl. Eval* 14(1), 1988, 3-113.

ECONOMICS OF EDUCATION

Kirpal, Viney and others. Wastage among scheduled caste and scheduled tribe students. *J. Hr. Edn.* (Delhi) 11 (1 & 2), 1985-86, 11-116.

PHYSICAL EDUCATION & SPORTS

Olafson, Gordon A and Hastings, Dennis W. Personal style and administrative behaviour in Amateur sport organizations. *J. Sport Management* 2(1), 1988, 26-39.

VOCATIONAL EDUCATION

Kaptan, S.S. A study of management education. *J. Hr. Edn.* (Delhi) 13(1-3). 1987-88, 108-11.

ADULT EDUCATION—NON FORMAL EDUCATION

Adiseshiah, Malcolm S. Poverty and education. *IASSI Qtly Bulletin* 7(1), 1988, 1-8.

DISTANCE EDUCATION

Bates, A.W. Technology for distance education : A 10 year prospective. *Open Learning* 3(3), 1988, 3-12.

Misrs, B.L. Distance education and management learning: The case of IGNOU. *J. Hr. Edn.* (Delhi) 13(1-3), 1987-88, 146-9.

Natarajan, V. A critical evaluative study on distance learning programmes in Indian Universities. *Studies Ednl. Eval.* 14(2), 1988, 147-50.

Ram Reddy, G. The Indira Gandhi National Open University : Its role in higher education. *J. Hr. Edn.* (Delhi), 11 (1 & 2), 1985-86, 157-67.

Simpson, Ormond. Counselling by correspondence in distance education. *Open Learning* 3(3), 1988, 43-5.

COMPARATIVE EDUCATION AND COUNTRY STUDIES

Finn, Chester E. Education reform in the United States : Trends and issues. *Intl. J. Educ. Res.* 12(2), 1988, 115-21.

Moonis Raza and Aggarwal, Yash. Higher education : Regional dimension. *J. Hr. Edn.* (Delhi), 11(1 & 2), 1985-86, 1-38.

RESTRUCTURING AN education system : The U.K.'s Education Reform Act. *ABCD* (85), 1988, 11-15.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

BIOLOGICAL SCIENCES

Anthropology

1. Ramakrishna Reddy, G. *Bio-anthropological study among Sunni Muslims of Chittoor District, Andhra Pradesh.* Venkateswara. Dr. T. Ramachandraiah, Department of Physical Anthropology, Sri Venkateswara University College, Tirupati.

Biochemistry

1. Bhaumik, Tapasi. *Metabolic effect of hormonal therapy in rats with special reference to normal contraceptives.* Calcutta.
2. Panda, Chinmay Kumar. *Studies on DNase I-hypersensitive sites of chromatin and its interactions with anthracyclin antitumour antibiotics.* Calcutta.

Microbiology

1. Lipton, Aaron Premnath. *Studies on microbial diseases of some commercially important fresh water fishes with special reference to Aeromonas sp. and Pseudomonas sq.* Madurai.
2. Saxena, Manoj. *Biochemical, immunological and pathological studies on intra and extra-cellular phospolipase A of Salmonella new-port.* Panjab.

Botany

1. Anil Kumar. *Studies on soil mycoflora amended with some local weeds.* Magadh.
2. Anjly. *Genetic and biochemical analysis of tryptophan requiring mutants of Rhizobium trifolii.* HAU.
3. Barua, Basabi. *Seed quality in Carthamus tinclorius L. cv. JLA 900 in relation to the position of infloresecence and the effects of retardants on growth and yield of the plant.* Burdwan. Dr. Kajal Gupta, Reader, Department of Botany, University of Burdwan, Burdwan.
4. Charyulu, N. V. Narasimha. *Physiological changes during growth and development of Spathodea campanulata Beavu flower.* Osmania.
5. Dhrub Prasad. *Fungal colonization on decaying herbaceous stems of some astaraceous plants.* Magadh.

6. Dhyani, A.P. *Mycoflora associated with the seeds of Brassica napus Linn and Capsicum spp. in storage and field conditions of Kumaun Hills.* Kumaun. Dr. R.D. Khulbe.

7. Gangwar, Abdhesh Kumar. *Cropping and yield patterns under slash and burn agriculture (Jhum) in North East India and related ethnobiological studies.* NEHU. Prof. P.S. Ramakrishnan, Prof., Department of Ecology, Jawaharlal Nehru University, New Delhi.

8. Palit, Ruma. *Tissue culture and biochemical studies of blast disease resistance in rice.* Osmania.

9. Pandey, Hansa. *Taxonomic study of aspergilli belonging to Aspergillus flouses group and their toxin producing capacity.* Kumaun. Dr. B.S. Mehrotra.

10. Pandey, Neeta. *Studies on the relationship of some storage insects and storage fungi of grains.* Kumaun. Dr. B S. Mehrotra.

11. Patnaik Suprava. *Studies of land use and village ecosystem function in the Khasi Hills of Meghalaya.* NEHU. Prof. P.S. Ramakrishnan, Department of Ecology, Jawaharlal Nehru University, New Delhi.

12. Sati, M.C. *Studies on seed-borne fungi or Lycopersicon esculentum Hill and Phaseolus vulgaris L. grown in Kumaun Hills.* Kumaun. Dr. R.D. Khulbe.

13. Shukla, Rani. *Ecological studies in fungi from plant litter submerged in water with special reference to its decomposition* Durgawati. Dr. D.P. Tiwari, Prof., Department of Botany, Government Science College, Jabalpur.

14. Singh, Baban Prasad. *Biosystematic study of some common weeds occurring in north Bihar.* Magadh.

15. Sree Ramachandra Murthy, M. *Studies on impact of soil and air pollution on vegetation of certain areas of Hyderabad.* Osmania.

16. Sudarsanam, G. *Ethnobotanical survey and phytopharmacochemical screening of selected medicinal plants of Chittoor District, A.P.* Venkateswara. Prof. P. Gopala Rao, Department of Botany, Sri Venkateswara University College, Tirupati.

17. Suvarnalatha, G. *Regulation of senescence of cowpea (Vigna unguiculata Linn) leaf discs by Calcium* (Ca^{2+}) *and chlorpromazine (CPZ), a* Ca^{2+}, *Calmodulin (CaM) antagonist.* Venkateswara. Prof. P.M. Swamy, Department of Botany, Sri Venkateswara University College, Tirupati.

18. Thakur, Arun Kumar. *Cytological and mutagenic studies in Papilionaceae.* Magadh.

Zoology

1. Baig, M. Azhar. *Effect of heptachlor, an organochlorine insecticide on functionally different muscles of freshwater edible fish, Channa punctatus.* Venkateswara. Dr. K. Jayantha Rao, Department of Zoology, Sri Venkateswara University College, Tirupati.

2. Banerjee, Udayan. *Studies on development of certain endocrine glands in fresh water turtle.* Bhopal. Dr. Arun Raghuvanshi, Reader, Department of Bioscience, Bhopal University, Bhopal.

3. Basha, Shaik Mahaboob. *Some parameters involved on the effects of organophosphates and organochlorides of fresh water mussel, Lamellidens marginalis (Lamarck) as a biomodel detector.* Venkateswara. Prof. K.S Swami, Department of Zoology, Sri Venkateswara University College, Tirupati.

4. Basu Roy, Tapasi.. *3H-thymidine radiography and the cycle of the seminiferous epithelium of the Indian gerbil, goat and boodugo mouse.* Burdwan. Prof. Sudhangshu Kr. Ghoshal, Department of Zoology, University of Burdwan, Burdwan.

5. Bhattacharyya, Anjana. *Effects of snake venom on liver and liver microsomes of albinorats.* Burdwan. Prof. Giridhari Majumdar, Department of Zoology, University of Burdwan, Burdwan and Prof. Chittaranjan Maity, Department of Biochemistry, Burdwan Medical College, Burdwan.

6. Danaraj, S. *Accumulation, metabolism and effect of some insecticides on non-target organisms.* Kumaun. Dr. B.R. Kaushal.

7. Dhindsa, Harjinder Singh. *Studies on false smut of rice in Punjab.* PAU.

8. Dwivedi, Deepa. *Statistical analysis of Spinometra gigantica (Trematoda : Plagiorcluidae) with special reference to correlation and regression.* Bhopal. Dr. Santosh Kumar, Prof. and Head, Department of Bioscience, Bhopal University, Bhopal.

9. Ghosh, Arabinda. *Histophysiological studies on the internal reproductive organs of the stored grain pest, Sitophilus oryze (L).* Calcutta

10. Gopal Krishna Pillai, K. *Taxonomy and bionomics of some predaceous spiders from major agricultural crops of Saurashtra Region, Gujarat.* Bhavnagar. Dr. B.H. Patel, Department of Zoology, Sir P.P. Institute of Science, Bhavnagar University, Bhavnagar.

11. Hardeep Singh. *Selection and calibration of an effective sprayer for control of bollworms on cotton.* PAU.

12. Hazra, Ashis Kumar. *Studies on the distribution of soil microarthropods in some poor and polluted soil environments of the West Bengal with special reference to Collembola.* Burdwan.

13. Kameswaramma, Anepu Lakshmi. *Studies on th mole crab, Emerita asiatica (Milne-Edwards) (Curstacea : Anomura).* Andhra.

14. Kiran Kumari. *Studies on condition factor and histology of the alimentary canal, gonads, thyroid and skin of Bagarius bagarius.* Magadh.

15. Mallick, Pranab Kr. *The reproductive behaviour and the chronology of meiosis and spermiogenesis in Rana limnocharis, Rana verrucosa and Rana cyanophlyctis.* Burdwan. Prof. Sudhangshu Kr. Ghoshal, Department of Zoology, University of Burdwan, Burdwan.

16. Manjula Devi, P. *Ecotoxicological studies on freshwater fishes with special reference to pollution.* Osmania.

17. Mankodi, P. C. *Histochemical and histometrical characteristics of mytomal and fin muscle fibre, their possible relation to growth of some fresh water and marine fishes.* Saurashtra. Dr. A.P. Mansuri.

18. Naidu, V. Sreenivasulu. *An elucidation of 2, 4-dichlorophenoxy acetic acid (herbocide) toxicity on the physiology of the fish, Tilapia mossambica (Peters).* Venkateswara. Dr. P. Murali Mohan, Department of Zoology, Sri Venkateswara University College, Tirupati.

19. Pal, Paresh Chandra. *Seasonal variations in the lipid, protein and carbohydrate content of liver, muscle and gonads in an Indian freshwater catfish, Clarias batrachus (Linnaeus) with reference to spermatogenesis and oogenesis.* Burdwan. Dr. Gaur Mohan Sinha, Reader, Department of Zoology, University of Burdwan, Burdwan.

20. Piska, Ravi Shankar. *Certain aspects of reproductive biology of carp minnow, Salmostoma clupeoides (Block) of hyd. waters.* Osmania.

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22. Ramesh Babu, S.B. *Effect of organophosphate pesticide methyl parathion on growth and aspects of metabolism of juveniles of fresh water teleost, Cyprinue carpio.* Venkateswara. Dr. P. Murali Mohan, Department of Zoology, Sri Venkateswara University College, Tirupati.

23. Ramesh Reddy, G. *Water deprivation effect on freshwater snail, Pila globosa : Role of ganglia in metabolism with special reference to proteins and lipids.* Venkateswara. Dr. G. Sreeramulu Chetty, Department of Zoology, Sri Venkateswara University College, Tirupati.

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25. Sain, Mangal. *Studies on varietal resistance and bionomics of rice gall midge, Orseolia oryzae (wood-mason).* Osmania.

26. Samanta, Amal Kr. *Studies on morphology and histochemistry of female reproductive organs and autoradiography of testis of certain Indian insects.* Burdwan. Dr. Mohitosh Banerjee, Reader, Department of Zoology, University of Burdwan, Burdwan.

27. Sant Prakash. *Genetic studies on Rana limnocharis.* NEHU. Dr. K Chatterjee, Department of Zoology, North Eastern Hill University, Shillong.

28. Sebastian, P. A. *Studies on the biology of some predaceous spiders on insect pests of some major crops of North Gujarat.* Bhavnagar. Dr. B.H. Patel, Department of Zoology, Sir P. P. Institute of Science, Bhavnagar University, Bhavnagar.

29. Singh, Jarnail. *Modelling and anylysis of rice milling system of Punjab State.* PAU.

30. Siva Prasad, S *Neurobiological studies on the silkworm, Bombyn mori.* Venkateswara. Dr. P. Muralimohan, Department of Zoology, Sri Venkateswara University College, Tirupati.

31 Sreenivasulu Reddy, E. *An attempt towards understanding certain metabolic control mechanism in the differentiation and development of the scorpion embryos.* Venkateswara. Dr. P. Venkateswara Rao, Department of Zoology, Sri Venkateswara University College, Tirupati.

32. Thanikonda, Baby Ratna Kumari. *Studies on morphology, growth, life cycles and population biology of some digenetic trematodes of the skipper frog, Rana cyanophlyctis Schneider.* Andhra.

33. Venkataiah, B. *The effects of tree plantation on the ecosystem structure and function of the soil arthropod populations of a semi-arid tropical savanna.* Kakatiya. Dr. M. Vikram Redy, Reader, Department of Zoology, Kakatiya University, Warangal.

34. Vijayalakshmi, P. *Studies on some metabolic and physiological responses in Metapenaeus monoceros (Fabricius) under sublethal phosphamidon exposure with emphasis on nitrogen metabolism.* Venkateswara. Dr K.V. Ramana Rao, Department of Zoology, Sri Venkateswara University, P.G. Centre, Kavali.

Medical Sciences

1. Chakraborti, Lakshminarayan. *Effects of body tilting on various physiological responses.* Calcutta.

2. Chaturvedi, Vishnu Prakash. *Blastomyces dermatidis : A study of its natural habitats and role in respiratory disease.* Delhi.

3. Gaitonde, R V. *Pharmacognestic study of some medicinal plants from Goa.* Goa. Dr. A.G. Untawale, Asstts. Director, National Institute of Oceanography, Dona-Paula, Goa.

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5. Mishra, Ghanashyam. *Netrottamh.* Jagannath. Pt. Kaviraj Narasingha Mohapatra.

6. Nageswara Rao, Gaddam. *Biopharmaceutical studies on a new technique of microencapsulation and its application in the design of controlled release dosage forms of selected drugs.* Andhra.

7. Vasanthakumari, G *Sex steroids and the pineal- hypothalamopituitary gonadal axis.* Madurai.

Agriculture

1. Bahirat, Dilip Waman *Feasibility of urea factory effluent for irrigation purpose.* MP Agrl. Dr. G.K. Zende, Ex-Head, Department of Agricultural Chemistry and Soil Science, Mahatma Phule Agricultural University, Rahuri.

2. Chattopadhyay, Nabansu. *Studies on characterization, availability and transformation of phosphorus and micronutrients in city wastes compost and utilization by rice.* Calcutta.

3. Chaudhari, Ashok Namadeo. *Inheritance of qualitative and quantitative characters in tomato (Lycopersicon esculentum Mill).* MP Phule. Dr. G P Argikar, Vrindavan, Vishrambag, Sangli.

4. Choudhary, Ram Snehi. *Residues and residual effectiveness of some organophosphorus insecticides against the pest complex of okra (Abelmoschus esculentus (Linn) Moench).* Rajendra Agrl.

5. Dattagupta, Manas Kumar. *Characterization, utilization and nutrients enrichment of city wastes compost.* Calcutta.

6. Sarma, Bharati Devi. *Physiological studies on the effect of plant growth regulators on the germination and vegetative growth of radish (Raphanus sativus).* Gauhati. Dr. C. M. Sharma, Reader, Department of Applied Botany and Biotechnology, Gauhati University, Gauhati.

7. Vishnu Kant. *Light storage of seed potatoes : Hormonal changes and Performance of cultivars differing in tuber dormancy.* H.P.

Animal Husbandry

1. Khala, I. Pihoto. *Studies on comparative efficacies of some anticoccidial drugs against Eimeria tenella infection in chicks.* Birsa Agrl.

2. Meitei, H. Medhabati. *Studies on the incidence and control of coccidial (Eimeria SPP) infections in rabbits.* Birsa Agrl.

3. Rasulbhai, Momin Rahemtulla. *Attempted immunization of crossbred calves against ixodid tick, Hyalomma anatolicum anatolicum Koch (1844).* HAU.

4. Sakharam, Bhagat Shamrao. *Studies on milking behaviour and management in murrah buffaloes.* HAU.

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(ii) Electronics & Commn. Engg.	1. Microwave Engg.	2. Instrumentation & Control
(iii) Mechanical Engineering	1. Heat Power	——
(iv) Space Engg. & Rocketry	1. Aerodynamics	2. Rocket Propulsion

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1. (i) **For M E. Electrical, Electronics & Commn. & Mechanical Engineering.**

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(ii) **For M.E. Space Engg. & Rocketry**

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2. Must have qualified at the Graduate Aptitude Test in Engineering (GATE).

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15% seats are reserved for Scheduled Caste candidates and $7\frac{1}{2}$% for Scheduled Tribes candidates. However, to be considered for admission they should have qualified at the GATE.

Students admitted to the above courses will receive Ministry of Human Resource Development Training Fellowship @ Rs. 1,000/- per month.

Application forms can be obtained from the Institute Office by sending a Postal Order for Rs. 25/- payable to the Registrar, Birla Institute of Technology, Mesra, at Mesra Post Office and a self-addressed envelope of size 280 mm x 125 mm having 1.80 stamp. Forms will be issued upto December 31, 1988 by post and upto January 6, 1989 at the Institute Counter. Completed Application Forms should reach the Institute latest by **January 7, 1989**.

Interviews of short-listed candidates will be held on **January 21, 1989** and regular classes will commence with effect from **January 23, 1989**.

J.B. Saksena
REGISTRAR & OSD

No. F. & 7-16/88 ES4

Ministry of Human Resource Development

(Department of Education)

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Last Date : 10.1.1989 for receipt of applications in the prescribed format.

General Instructions : (i) The application should be made in the prescribed format (in triplicate) (format given below the advertisement) (ii) Photograph should be attached with each copy of the application. (iii) Applications should have the approval of the Head of the Department concerned, where the applicant is a Government servant, employed in Government Undertaking or a Body funded by the Government. (iv) Signature and stamp of the employer should be affixed on the application. (v) Each application must be accompanied by :

(a) attested copy of the certificate of age. (b) attested copy of the marks-sheet of the qualifying examination. (c) attested copies of all degrees/diploma certificates. (d) proof of the capacity to pursue studies applied for.

(vi) Candidates who have been awarded scholarships in any scheme need not apply for scholarship under this scheme. (vii) Candidates who are at present abroad are not eligible to apply. Candidates who have already been abroad for studies/training/specialisation, whether on scholarship or on their own, are eligible to apply only if they have been in India for at least 3 (three) consecutive years after their return from abroad as on 1.10.1988. (viii) Interview letters in a particular subject are sent only to the best candidates in order of merit after their applications are judged by a duly constituted Selection Committee of Experts. (ix) Equivalent foreign Degrees and Diplomas are acceptable. (x) In case of the candidates qualifying from Universities/Institutions which do not give class or Division, requirements in lieu of Ist Class would be 60% marks. Where grades are awarded, the candidates are required to furnish exact percentage or marks and indicate the conversion formula. (xi) In case the Indian Postal Order is enclosed with the Advance copy, it is not necessary to enclose the same again, but the applications received **without IPO will** be incomplete and not be considered. (*Postal Orders issued only after the date on which the advertisement was published in the news paper will be accepted*). (xii) Candidates should have adequate knowledge of geographical situation, culture and heritage of India and donor country. (xiii) Please indicate if the candidate is already in touch with any of the British Universities, and if the candidate gets admission, he should furnish a proof to this effect. (xiv) Canvassing in any form will be a disqualification. (xv) *Persons not possessing the prescribed qualifications need not apply.*

FORMAT

The candidate should apply for the above scholarship on **PLAIN PAPER** with a recent passport size photograph, furnishing the following details/particulars to : The Assistant Educational Adviser, Ministry of Human Resource Development, Department of Education, External Scholarships Division, E.S. 4 Section, Room No. 517-B Wing, Shastri Bhavan, New Delhi-110001, by **10-1-1989** (Note : Applications received late will not be entertained).

1. Name of the Scholarship Scheme
2. (a) Subject : (b) Sub-Subject
3. Name of the candidate in block letters with full mailing address :
4. Date of birth and State to which the candidate belongs :
5. Whether a member of SC/ST or a Tribal of aboriginal Community, if so, give full particulars.
6. Academic record starting from high school/ higher secondary level.

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Photograph duly signed in
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pasted here. Without
photograph application will
be considered incomplete

Name of the University/Board/ Institution	Examinations passed	Year of passing	Division/ Class with Position; if any	% age of marks obtained and position, if any.	Subject taken.

7. Details of Professional/Practical Training and Research Experience, specifying the period & number of papers published, previous employment with name & date of employment, if any.

8. Nature of the present employment with date of appointment, designation and the name and address of the employer.

9. Name, Designation and address of three referees who are familiar with work of the scholar : (Candidates called for interview will have to bring with them the comments of all three referees).

10. Have you been abroad, if so, give full particulars of the country and the period of stay and the date of return to India.

11. Proposed programme of study/research/training :

(i) the work in which engaged at present. (ii) nature & programme of study/research and possible British University/Institute. (iii) Future plans/prospects after the proposed studies/research and (iv) How are related to the technical or economic or social development of India; a write-up in 300 words (Approximately).

12. Crossed Postal Order of Rs. 5 00 (Rs. 1.25 in case of SC/ST candidates, etc) payable to the Secretary, Ministry of Human Resource Development, Department of Education, New Delhi, may be attached with the form. (Only one P.O. worth Rs. 5/- should be submitted even though you are required to submit the application IN TRIPLICATE).

Place———— Signature of the Candidate

Date————

NOTE : Employed candidates must send their applications fully sponsored by the Employers. However, advance applications will be considered provisionally pending employer's sponsorship.

davp 88/595

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N. Krishnamoorthy
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Dr. Yashwant Singh Parmar University of Horticulture and Forestry, Solan (Nauni) H.P.

ADMISSION NOTICE

Applications (in duplicate) are invited upto **9-1-1989** for admission to Doctoral Programme in the disciplines shown as under against each College for the Academic Session 1988-89 (Second Semester) commencing from **23rd January, 1989.** The eligible candidates must bring all the original certificates and present themselves for interview on the date noted below against each College.

Disciplines	Date of Interview	Minimum Qualifications
I. College of Forestry, Solan	11-1-1989 (11.00 A.M.)	M.Sc. in the concerned discipline from a recognised University. In case of Forestry, the following shall also be eligible in order of preference. (a) M.Sc. Science with AIFC/SFS 2 years diploma course (b) M.Sc. (Hort.) (c) M.Sc. (Agr.) Provided that the candidates must have secured an OGPA 3.20/4.00 or its equivalent under course credit system or atleast 65% marks in aggregate in case of annual system of Examination. OR Degree of a Foreign University (with atleast 'B' grade or its equivalent) recognised as equivalent for the purpose by the Academic Council.
1. Forest Biology & Tree Improvement		
2. Silviculture & Agro-forestry		
3. Forest Products & Utilization		
II. College of Horticulture, Solan	12-1-1989 (11.00 A.M)	
1. Fruit Culture & Orchard Management		
2. Post Harvest Technology		
3. Vegetable Crops		
4. Entomology & Apiculture		
5. Mycology & Plant Pathology		

Reservation for Scheduled Caste/Scheduled Tribe Candidates

22½% of the total seats (except 10% seats reserved for ICAR nominees) shall be reserved for the candidates belonging to scheduled caste (15%) and scheduled tribe (7½%). In case candidates in any of these categories are not available the seat(s) will be interchangeable between these two categories. The minimum qualifying marks for the candidates of above categories shall be relaxed by 5%.

General

(i) The inservice candidates must apply through proper channel by specified date with specific letters of sponsorship.

(ii) No separate interview letters will be issued. No TA etc. will be admissible for attending interview. The ineligible candidates need not come for interview.

(iii) Prospectus-cum-Admission Form is obtainable from the office of the undersigned on payment of Rs. 10.00 in cash at the counter or by sending crossed Indian Postal Order worth Rs. 15.00 payable to the Comptroller, the Dr. Yashwant Singh Parmar University of Horticulture and Forestry, Solan. No Money Order will be accepted for this Purpose.

(iv) List of selected candidates as well as the candidates placed on waiting list for disciplines of both the colleges will be displayed by **13-1-1989.**

B.S. Nainta
REGISTRAR

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The above positions are available in the divisions inclusive of the sectional areas indicated below :

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Preferably below 50 years, relaxable in deserving cases. A duly constituted 'Screening Committee' will decide on the number of scientists to be invited to meet the full Selection Committee. The decision of the Council in this behalf will be final. Applications from employees working in Government Departments, Public Sector Organizations and Government funded research agencies will be considered only if forwarded through proper channel and with a clear certificate that the applicant will be released within three months of receipt of the appointment orders.

Those interested may kindly send in their Curriculum Vitae in duplicate in the form obtainable from the **Controller of Administration, National Metallurgical Laboratory, Jamshedpur 831007,** on or before **January 30, 1989.**

UNIVERSITY OF RAJASTHAN JAIPUR

Advertisement No. Estt. II/88/II

Dated : 17-12-88

Applications are invited (through proper channel in case of those who are already in employment) so as to reach this office on or before **6.1.1989,** in the prescribed form obtainable from the Registrar's office on pre-payment of Rs. 4/- in cash (Rs. 10/- in case required by post) for the following posts :

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(iii) Retired persons need not apply.

(iv) Incomplete applications or applications received on plain paper or after **6.1.1989,** will not be entertained in any case.

(v) Dearness and other allowances are admissible as per University Rules.

(vi) Candidates will be called for interview at their own expenses.

(vii) The minimum age of the candidate should be 18 years on the last date of receipt of application.

(viii) There is a reservation of S.C./S.T. candidates to the extent of 16% and 12% of posts in each category.

REGISTRAR

BANASTHALI VIDYAPITH

(Deemed to be University)

NATIONAL INSTITUTION FOR EDUCATION OF WOMEN

Requires the following

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	Lecturers	2	Teaching of Economics 1 Teaching of Political Sc. 1
(ii) Adult & Continuing Education			
	Co-ordinator	1	
	Project Officer	1	Adult & Continuing Education
(iii) Faculty of Home Science			
Clothing & Textile	Professor	1	
	Reader	1	
	Tech. Asstt.	1	
(iv) Faculty of Fine Arts			
Music	Lecturer	1	(Vocal Music)
(v) Faculty of Social Science			
Economics	Reader	1	Micro Economic Theory/Theory of Economic Growth/Research Methodology
(vi) Faculty of Humanities			
English	Professor	1	(Teaching Methods/Evaluation & Course Development/Criticism/Modern Poetry)
	Tech. Asstt. (Language Laboratory)	1	
(vii) Central Library			
(a) Junior Technical Assistant Library Science		1	Graduate and B.Lib. Sc. Experience desirable.
(b) Library Assistants		2	Hr. Secondary with Certificate in Library Science. English/Hindi Type Knowing preferred.

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(ii) Selection Committee may recommend higher start in exceptional cases on merit.

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(iv) Vidyapith will contribute travel assistance upto IInd class fare for interview for all other posts. However 1st class fare for the post of Professor.

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INDIAN INSTITUTE OF SCIENCE

BANGALORE-560 012

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Post 2 : Ph.D. in Electrical/Electronics/Communication Engg. or Computer Science with specialisation in Computer Communication or Computer Networking or Computer Hardware/Software or Communication System Hardware/Software with 2 to 3 years experience; OR Master's Degree in Electrical/Electronics/Communication Engg. or Computer Science with specialisation in Computer Communication or Computer Networking or Computer Hardware/Software or Communication System Hardware/Software with 4 to 6 years experience. (The appointment is upto 30.6.1990, but likely to continue).

Post 3 : Ph.D. in Science/Engg./Technology with 2 to 3 years good research experience in Thermal/Analytical instrumentation.

Post 4 : Master's Degree in Computer Science/Engg. with experience in programming in FORTRAN, COBOL, PASCAL, DBMS and C; OR Master's Degree in Library Science or Associateship in Documentation/Information Science from DRTC or INS-

DOC with atleast 3 years experience in software development in FORTRAN, COBOL, PASCAL, DBMS and C.

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REGISTRAR

UNIVERSITY OF HYDERABAD

(A CENTRAL UNIVERSITY

Established in 1974 by an Act of Parliament)

Employment Notification

No. UH/R/Rctt/9/88

Dated : 7-12-1988

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1. One post of **Reader**
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2. One post of **Lecturer**
   (Pay Scale of Rs. 2200-75-2800-100-4000)
3. One post of **Documentation-cum-Technical Assistant**
   (Pay Scale of Rs. 1640-60-2600-EB-75-2900)

Note : (i) Posts carry allowances as per Central Government rates applicable at Hyderabad.

(ii) Candidates for the posts of Reader and Lecturer are required in any of the areas in Social Sciences/Humanities/Sciences / Management/Education.

The prescribed application form and other details of qualifications etc., can be had either in person from the Office of the Academic Staff College at the Golden Threshold, Nampally Station Road, Hyderabad 500 001, or from the Administration Office (Recruitment Section) at the University Campus, in Gachibowli, Hyderabad 500 134) or by post by sending a self-addressed envelope of size 28 cm x 13 cm duly affixing postage stamps worth of Rs. 2/- and superscribing on the top left corner of the envelope "Request for application for the post———in Academic Staff College".

The last date for the receipt of the filled-in applications is **7th January, 1989.**

Acting REGISTRAR

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(PUNJAB)

Camp Office : Mehr Chand Polytechnic Hostel, Kabir Nagar,

Jalandhar-144 008

Advertisement No. (7/88)

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Asstt. Prof. in Textile Engineering (One Post) : Rs. 1200-50-1300-60-1900 (Unrevised but likely to be revised).

Qualifications

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An eminent scholar with published work of high quality, actively engaged in research. Ten years' full time experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding Engineer/Technologist with established reputation who has made a significant contribution to knowledge.

2. Asstt. Professor in Textile Engineering

Good academic record with a Doctor's Degree in a relevant field. About five years full time experience of teaching and/or research and development. Provided further that candidates, not possessing Ph.D. may be considered if they have to their credit equivalent research published work or design development work of a high order either in an institution or in an industry.

OR

In the case of persons to be recruited from industry or professional fields, candidates should possess good academic record with recognised professional work of about seven years which should include innovation and/or research and development.

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3. Name in block letters
4. Father's Name
5. Address : Permanent/Present
6. Date of Birth
7. Qualifications : Name of examination passed, Name of Institution, year of passing, % of marks, Division/Rank etc. with documentary proof.
8. Experience giving complete details of posts held, period of employment, Name of employer, Salary drawn (separately showing basic pay and D.A.) with documentary proof.
9. Details of Research/Published work (attach prints/photocopies).
10. Joining time required.
11. Name and Addresses of two references.
12. Any other relevant information.

V.S. Julka

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